

# Reading 57: Basics of Derivative Pricing and Valuation

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## Question #1 of 62

Question ID: 415902

Compared to European put options on an asset with no cash flows, an American put option:

- ☐ A) will have the same minimum value.
- ☐ B) will have a lower minimum value.
- ☒ C) will have a higher minimum value.

### Explanation

Early exercise of an in-the-money American put option on an asset with no cash flows can generate more,  $X - S$ , than the minimum value of the European option,  $X / (1 + R)^T - S$ . The possibility of profitable early exercise leads to a higher minimum value on the price of the American put option.

### References

**Question From:** Session 17 > Reading 57 > LOS o

### **Related Material:**

- Key Concepts by LOS
- 

## Question #2 of 62

Question ID: 492029

A net benefit from holding the underlying asset of a forward contract will:

- ☒ A) decrease the no-arbitrage forward price at initiation.
- ☐ B) decrease the value of the forward contract at expiration.
- ☐ C) increase the value of the forward contract during its life.

### Explanation

Compared to an underlying asset with no net holding cost or benefit, a net benefit from holding the underlying asset will decrease the no-arbitrage forward price at initiation and the value of a forward contract during its life. Holding costs and benefits have no effect on the value of a forward contract at expiration.

### References

**Question From:** Session 17 > Reading 57 > LOS d

### **Related Material:**

- Key Concepts by LOS
- 

## Question #3 of 62

Question ID: 492032

Which of the following is typically equal to zero at the initiation of an interest rate swap contract?

- X **A)** Its price.
- X **B)** Neither its value nor its price.
- ✓ **C)** Its value.

#### Explanation

As with other derivatives, the price of an interest rate swap (the fixed rate specified in the contract) is typically set such that the value of the swap is zero at initiation.

#### References

**Question From:** Session 17 > Reading 57 > LOS h

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #4 of 62**

Question ID: 415858

An investor would exercise a put option when the:

- X **A)** price of the stock is above the strike price.
- ✓ **B)** price of the stock is below the strike price.
- X **C)** price of the stock is equal to the strike price.

#### Explanation

A put option gives its owner the right to sell the underlying good at a specified price (strike price) for a specified time period. When the stock's price is less than the strike price a put option has value and is said to be *in-the-money*.

#### References

**Question From:** Session 17 > Reading 57 > LOS j

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #5 of 62**

Question ID: 500876

When interest rates and futures prices for an asset are uncorrelated and forwards are less liquid than futures, it is *most likely* that the price of a forward contract is:

- X **A)** less than the price of a futures contract.
- ✓ **B)** equal to the price of a futures contract.
- X **C)** greater than the price of a futures contract.

#### Explanation

When interest rates and futures prices are uncorrelated the prices of forward and futures on the same asset will be equal. Liquidity is not an issue as no-arbitrage prices are based on riskless hedges that are held until settlement of the derivative security.

## References

**Question From:** Session 17 > Reading 57 > LOS f

### Related Material:

- Key Concepts by LOS
- 

## Question #6 of 62

Question ID: 415869

Consider a put option on Deter, Inc., with an exercise price of \$45. The current stock price of Deter is \$52. What is the intrinsic value of the put option, and is the put option at-the-money or out-of-the-money?

	<u>Intrinsic Value</u>	<u>Moneyness</u>
✓ <b>A)</b>	\$0	Out-of-the-money
X <b>B)</b>	\$7	At-the-money
X <b>C)</b>	\$7	Out-of-the-money

### Explanation

The option has an intrinsic value of \$0, because the stock price is above the exercise price. Put value is  $\text{MAX}(0, X-S)$ . Equivalently, the option is out-of-the-money.

## References

**Question From:** Session 17 > Reading 57 > LOS j

### Related Material:

- Key Concepts by LOS
- 

## Question #7 of 62

Question ID: 415916

Which of the following statements about long positions in put and call options is *most* accurate? Profits from a long call:

- X **A)** are negatively correlated with the stock price and the profits from a long put are positively correlated with the stock price.
- X **B)** and a long put are positively correlated with the stock price.
- ✓ **C)** are positively correlated with the stock price and the profits from a long put are negatively correlated with the stock price.

### Explanation

For a call, the buyer's (or the long position's) potential gain is unlimited. The call option is in-the-money when the stock price ( $S$ ) exceeds the strike price ( $X$ ). Thus, the buyer's profits are positively correlated with the stock price. For a put, the buyer's (or the long position's) potential gain is equal to the strike price less the premium. A put option is in-the-money when  $X > S$ . Thus, a put buyer wants a high exercise price and a low stock price. Thus, the buyer's profits are negatively correlated with the stock price.

## References

**Question From:** Session 17 > Reading 57 > LOS k

**Related Material:**

- Key Concepts by LOS
- 

## Question #8 of 62

Question ID: 415891

An option's intrinsic value is equal to the amount the option is:

- ✓ **A)** in the money, and the time value is the market value minus the intrinsic value.
- X **B)** out of the money, and the time value is the market value minus the intrinsic value.
- X **C)** in the money, and the time value is the intrinsic value minus the market value.

### Explanation

Intrinsic value is the amount the option is in the money. In effect it is the value that would be realized if the option were at expiration. Prior to expiration, the option's market value will normally exceed its intrinsic value. The difference between market value and intrinsic value is called time value.

### References

**Question From:** Session 17 > Reading 57 > LOS j

**Related Material:**

- Key Concepts by LOS
- 

## Question #9 of 62

Question ID: 415867

James Anthony has a short position in a put option with a strike price of \$94. If the stock price is below \$94 at expiration, what will happen to Anthony's short position in the option?

- ✓ **A)** He will have the option exercised against him at \$94 by the person who is long the put option.
- X **B)** The person who is long the put option will not exercise the put option.
- X **C)** He will let the option expire.

### Explanation

Anthony has *sold the right to sell the stock* at \$94. That is, he received a payment upfront for the payer to have the right but not the obligation to sell the stock at \$94. Because the option is in-the-money at expiration,  $\text{MAX}(0, X-S)$ , the holder will exercise his right to sell at \$94.

### References

**Question From:** Session 17 > Reading 57 > LOS j

**Related Material:**

- Key Concepts by LOS
-

## Question #10 of 62

Question ID: 415929

Greater volatility in the price of the underlying asset will have what effect on the value of a call option and the value of a put option?

<u>Value of a call option</u>	<u>Value of a put option</u>
-------------------------------	------------------------------

- |  |          |
|--|----------|
| <input type="radio"/> A) Increase            | Decrease |
| <input checked="" type="radio"/> B) Increase | Increase |
| <input type="radio"/> C) Decrease            | Increase |

### Explanation

Greater volatility in the price of the underlying asset increases the values of both puts and calls because options are "one-sided." Since an option's value can fall no lower than zero (it expires out of the money), increased volatility increases an option's upside potential but does not increase its downside exposure.

### References

**Question From:** Session 17 > Reading 57 > LOS k

#### **Related Material:**

- Key Concepts by LOS
- 

## Question #11 of 62

Question ID: 472451

A synthetic European put option includes a short position in:

- ☐ A) a European call option.
- ☐ B) a risk-free bond.
- ☒ C) the underlying asset.

### Explanation

A synthetic European put option consists of a long position in a European call option, a long position in a risk-free bond that pays the exercise price on the expiration date, and a short position in the underlying asset.

### References

**Question From:** Session 17 > Reading 57 > LOS I

#### **Related Material:**

- Key Concepts by LOS
- 

## Question #12 of 62

Question ID: 472447

The price of a fixed-for-floating interest rate swap contract:

- ☐ A) is directly related to changes in the floating rate.

- ✓ **B)** is established at contract initiation.
- X **C)** may vary over the life of the contract.

#### Explanation

The price of a swap contract is set such that the contract has a value of zero at initiation. The *value* of a fixed-for-floating interest rate swap contract may vary over its life as the floating rate changes.

#### References

**Question From:** Session 17 > Reading 57 > LOS h

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #13 of 62**

Question ID: 472448

At expiration, the value of a call option is the greater of zero or the:

- ✓ **A)** underlying asset price minus the exercise price.
- X **B)** underlying asset price minus the exercise value.
- X **C)** exercise price minus the exercise value.

#### Explanation

The value of a call option at expiration is its exercise value, which is  $\text{Max}[0, S - X]$ .

#### References

**Question From:** Session 17 > Reading 57 > LOS i

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #14 of 62**

Question ID: 472438

The value of a forward or futures contract is:

- X **A)** equal to the spot price at expiration.
- X **B)** specified in the contract.
- ✓ **C)** typically zero at initiation.

#### Explanation

The value of a forward or futures contract is typically zero at initiation, and at expiration is the difference between the spot price and the contract price. The *price* of a forward or futures contract is defined as the price specified in the contract at which the two parties agree to trade the underlying asset on a future date.

#### References

**Question From:** Session 17 > Reading 57 > LOS b

**Related Material:**

- Key Concepts by LOS
- 

**Question #15 of 62**

Question ID: 415859

Basil, Inc., common stock has a market value of \$47.50. A put available on Basil stock has a strike price of \$55.00 and is selling for an option premium of \$10.00. The put is:

- ☐ A) in-the-money by \$10.00.
- ☒ B) in-the-money by \$7.50.
- ☐ C) out-of-the-money by \$2.50.

Explanation

The put allows a trader to sell Basil common stock for \$7.50 more than the current market value ( $\$55.00 - \$47.50$ ). The trade is normally closed out with a cash settlement, but the trader could buy 100 shares for \$47.50 per share and immediately sell them to the option writer for \$55.00.

References

**Question From:** Session 17 > Reading 57 > LOS j

**Related Material:**

- Key Concepts by LOS
- 

**Question #16 of 62**

Question ID: 415927

A decrease in the riskless rate of interest, other things equal, will:

- ☐ A) increase call option values and decrease put option values.
- ☐ B) decrease call option values and decrease put option values.
- ☒ C) decrease call option values and increase put option values.

Explanation

A decrease in the risk-free rate of interest will decrease call option values and increase put option values.

References

**Question From:** Session 17 > Reading 57 > LOS k

**Related Material:**

- Key Concepts by LOS
- 

**Question #17 of 62**

Question ID: 498774

Which of the following will increase the value of a call option?

- X **A)** A dividend on the underlying asset.
- X **B)** An increase in the exercise price.
- ✓ **C)** An increase in volatility.

#### Explanation

Increased volatility of the underlying asset increases both put values and call values. A higher exercise price or an increase in cash flows on the underlying asset decrease the value of a call option.

#### References

**Question From:** Session 17 > Reading 57 > LOS k

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #18 of 62**

Question ID: 492028

For an underlying asset that has no holding costs or benefits, the value of a forward contract to the long during the life of the contract is the:

- X **A)** difference between the spot price and the forward price.
- X **B)** present value of the difference between the spot price and the forward price.
- ✓ **C)** spot price minus the present value of the forward price.

#### Explanation

During the life of a forward contract on an underlying asset with no holding costs or benefits, the value to the long equals the spot price minus the present value of the forward price:

$$V_t(T) = S_t - F_0(T) / (1 + Rf)^{T-t}.$$

#### References

**Question From:** Session 17 > Reading 57 > LOS c

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #19 of 62**

Question ID: 415912

For two European put options that differ only in their time to expiration, which of the following is *most* accurate? The longer-term option:

- ✓ **A)** can be worth less than the shorter-term option.
- X **B)** is worth at least as much as the shorter-term option.
- X **C)** is worth more than the shorter-term option.

#### Explanation

For European puts, it is possible that the longer term option can be less valuable than a shorter-term option.



## References

**Question From:** Session 17 > Reading 57 > LOS k

**Related Material:**

- Key Concepts by LOS
- 

## Question #20 of 62

Question ID: 500880

The relationship referred to as put-call-forward parity states that at time = 0, if there is no arbitrage opportunity, the value of a call at X on an asset that has no holding costs or benefits plus the present value of X is equal to:

- ☐ A) the asset price minus the value of a put option at X.
- ☐ B) the forward contract price plus the value of a put option at X.
- ☒ C) the value of a put option at X plus the present value of the forward contract price.

## Explanation

The put-call-forward parity relationship is:

$$c_0 + X/(1 + R_f)^T = p_0 + F_0(T)/(1 + R_f)^T$$

The value of a call at X plus the present value of X is equal to the value of a put option at X plus the present value of the forward contract price.

## References

**Question From:** Session 17 > Reading 57 > LOS m

**Related Material:**

- Key Concepts by LOS
- 

## Question #21 of 62

Question ID: 472437

The calculation of derivatives values is based on an assumption that:

- ☐ A) arbitrage opportunities do not arise in real markets.
- ☒ B) arbitrage opportunities are exploited rapidly.
- ☐ C) investors are risk neutral.

## Explanation

Derivatives valuation is based on the assumption that any arbitrage opportunities in financial markets are exploited rapidly so that assets with identical cash flows are forced toward the same price. It does not assume arbitrage opportunities do not arise or that investors are risk neutral.

## References

**Question From:** Session 17 > Reading 57 > LOS a

**Related Material:**

- Key Concepts by LOS
- 

## Question #22 of 62

Question ID: 500875

Bea Moran wants to establish a long derivatives position in a commodity she will need to acquire in six months. Moran observes that the six-month forward price is 45.20 and the six-month futures price is 45.10. This difference *most likely* suggests that for this commodity:

- ☐ A) there is an arbitrage opportunity among forward, futures, and spot prices.
- ☒ B) futures prices are negatively correlated with interest rates.
- ☐ C) long investors should prefer futures contracts to forward contracts.

### Explanation

Differences may exist between forward and futures prices for otherwise identical contracts if futures prices are correlated with interest rates. If futures prices are negatively correlated with interest rates, daily settlement of long futures contracts will require cash when interest rates are increasing and produce cash when interest rates are decreasing. As a result the futures price will be lower than the forward price. The difference in price does not provide an arbitrage opportunity or suggest that investors should prefer forward or futures contracts.

### References

**Question From:** Session 17 > Reading 57 > LOS f

### **Related Material:**

- Key Concepts by LOS
- 

## Question #23 of 62

Question ID: 496435

The *most likely* use of a forward rate agreement is to:

- ☒ A) lock in an interest rate for future borrowing or lending.
- ☐ B) obtain the right, but not the obligation, to borrow at a certain interest rate.
- ☐ C) exchange a floating-rate obligation for a fixed-rate obligation.

### Explanation

The purpose of a forward rate agreement (FRA) is to lock in an interest rate for future borrowing or lending. An FRA is a forward commitment rather than a contingent claim. An interest rate swap is used to exchange a floating-rate obligation for a fixed-rate obligation.

### References

**Question From:** Session 17 > Reading 57 > LOS e

### **Related Material:**

- Key Concepts by LOS
- 

## Question #24 of 62

For an underlying asset that has no holding costs or benefits, the no-arbitrage forward price at initiation of a forward contract is:

- ✓ **A)** the future value of the spot price.
- X **B)** equal to the spot price.
- X **C)** zero.

#### Explanation

At initiation of a forward contract on an underlying asset with no holding costs or benefits, the no-arbitrage forward price is the future value of the spot price, compounded at the risk-free rate to the expiration date of the forward contract:  $F_0(T) = S_0(1 + R_f)^T$ . The forward contract has a *value* of zero at initiation if the forward price in the contract is equal to the no-arbitrage forward price.

#### References

**Question From:** Session 17 > Reading 57 > LOS c

#### **Related Material:**

- Key Concepts by LOS

## **Question #25 of 62**

Question ID: 500874

Derivatives valuation is based on risk-neutral pricing because:

- X **A)** risk tolerances of long and short investors are assumed to offset.
- ✓ **B)** the risk of a derivative is based entirely on the risk of its underlying asset.
- X **C)** this method provides an intrinsic value to which investors apply a risk premium.

#### Explanation

Because the risk of a derivative is based entirely on the risk of its underlying asset, we can construct a perfectly hedged portfolio of a derivative and its underlying asset. The future payoff of a perfectly hedged position is certain and can therefore be discounted at the risk-free rate.

#### References

**Question From:** Session 17 > Reading 57 > LOS a

#### **Related Material:**

- Key Concepts by LOS

## **Question #26 of 62**

Question ID: 472453

Which of the following instruments is a component of the put-call-forward parity relationship?

- ✓ **A)** The present value of the forward price of the underlying asset.
- X **B)** The spot price of the underlying asset.
- X **C)** The future value of the forward price of the underlying asset.

#### Explanation

The put-call-forward parity relationship is:  $F_0(T) / (1 + RFR)^T + p = c + X / (1 + RFR)^T$ , where  $F_0(T)$  is the forward price of the underlying asset.

#### References

**Question From:** Session 17 > Reading 57 > LOS m

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #27 of 62**

Question ID: 415920

Using put-call parity, it can be shown that a synthetic European put can be created by a portfolio that is:

- ☐ **A)** short the stock, long the call, and short a pure discount bond that pays the exercise price at option expiration.
- ☒ **B)** short the stock, long the call, and long a pure discount bond that pays the exercise price at option expiration.
- ☐ **C)** long the stock, short the call, and short a pure discount bond that pays the exercise price at option expiration.

#### Explanation

A short position in the stock combined with a long call and lending the present value of the exercise price will replicate the payoffs on a put at option expiration.

#### References

**Question From:** Session 17 > Reading 57 > LOS I

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #28 of 62**

Question ID: 415919

Using put-call parity, it can be shown that a synthetic European call can be created by a portfolio that is:

- ☐ **A)** long the stock, short the put, and short a pure discount bond that pays the exercise price at option expiration.
- ☒ **B)** long the stock, long the put, and short a pure discount bond that pays the exercise price at option expiration.
- ☐ **C)** long the stock, long the put, and long a pure discount bond that pays the exercise price at option expiration.

#### Explanation

A stock and a put combined with borrowing the present value of the exercise price will replicate the payoffs on a call at option expiration.

#### References

Question From: Session 17 > Reading 57 > LOS I

Related Material:

- Key Concepts by LOS

Question #29 of 62

Question ID: 456309

A put option is in the money when:

- ✓ **A)** the stock price is lower than the exercise price of the option.
- X **B)** there is no put option with a lower exercise price in the expiration series.
- X **C)** the stock price is higher than the exercise price of the option.

Explanation

The put option is in-the-money if the stock price is below the exercise price.

References

Question From: Session 17 > Reading 57 > LOS j

Related Material:

- Key Concepts by LOS

Question #30 of 62

Question ID: 472450

Dividends or interest paid by the asset underlying a call option:

- X **A)** increase the value of the option.
- X **B)** have no effect on the value of the option.
- ✓ **C)** decrease the value of the option.

Explanation

Dividends or interest paid by the underlying asset decrease the value of call options.

References

Question From: Session 17 > Reading 57 > LOS k

Related Material:

- Key Concepts by LOS

Question #31 of 62

Question ID: 415863

Given the following data regarding Printer, Inc.'s call options, which of the following statements is *least* accurate?

Stock Price	Expiration	Strike	Option Prem. (Last)

50	June	45	6
50	June	50	2
50	June	55	0.50

- ✓ **A)** The June \$55.00 call is an in-the-money option.
- ✗ **B)** The June \$45.00 call is an in-the-money option.
- ✗ **C)** The intrinsic value of the June \$45.00 call is \$5.00.

#### Explanation

The June \$55.00 call option is out-of-the money. It gives the purchaser the right to buy Printer, Inc. for \$55.00 when they would only have to pay \$50.00 in the market.

#### References

**Question From:** Session 17 > Reading 57 > LOS j

#### **Related Material:**

- Key Concepts by LOS

## Question #32 of 62

Question ID: 492034

Consider a European call option and put option that have the same exercise price, and a forward contract to buy the same underlying asset as the two options. An investor buys a risk-free bond that will pay, on the expiration date of the options and the forward contract, the difference between the exercise price and the forward price. According to the put-call-forward parity relationship, this bond can be replicated by:

- ✓ **A)** writing the call option and buying the put option.
- ✗ **B)** writing the call option and writing the put option.
- ✗ **C)** buying the call option and writing the put option.

#### Explanation

The put-call-forward parity relationship may be expressed as:

$$p_0 - c_0 = [X - F_0(T)] / (1 + R_f)^T$$

That is, at initiation of a forward contract on the underlying asset, buying a put option and writing a call option with exercise price X will have the same cost as a risk-free bond which, at expiration of the forward and options, will pay the difference between X and the forward price.

#### References

**Question From:** Session 17 > Reading 57 > LOS m

#### **Related Material:**

- Key Concepts by LOS

## Question #33 of 62

Question ID: 492031

If futures prices are positively correlated with interest rates, futures prices will be:

- ☐ A) less than forward prices.
- ☒ B) greater than forward prices.
- ☐ C) unaffected relative to forward prices.

### Explanation

Futures prices will be greater than forward prices if interest rates are positively correlated with futures prices, because daily settlement of long futures positions will produce excess margin when interest rates are high and require margin deposits when interest rates are low.

### References

**Question From:** Session 17 > Reading 57 > LOS f

### **Related Material:**

- Key Concepts by LOS
- 

## Question #34 of 62

Question ID: 415773

A forward rate agreement (FRA):

- ☐ A) is settled by making a loan at the contract rate.
- ☐ B) is risk-free when based on the Treasury bill rate.
- ☒ C) can be used to hedge the interest rate exposure of a floating-rate loan.

### Explanation

An FRA settles in cash and carries both default risk and interest rate risk, even when based on an essentially risk-free rate. It can be used to hedge the risk/uncertainty about a future payment on a floating rate loan.

### References

**Question From:** Session 17 > Reading 57 > LOS e

### **Related Material:**

- Key Concepts by LOS
- 

## Question #35 of 62

Question ID: 500881

A one-period binomial model is useful for valuing options because it:

- ☐ A) considers the additional risk inherent in options.
- ☒ B) can account for contingent payoffs of options.
- ☐ C) does not require an assumption about volatility.

### Explanation

Binomial models are used to value options because they can account for contingent payoffs (i.e., the exercise value after an up-move or down-move in the underlying asset price). The size of an up-move in a binomial model represents an assumption about the volatility of the underlying asset price. Binomial models can use risk-neutral pseudo-probabilities and thereby use the risk-free rate to discount the expected future payoff.

#### References

**Question From:** Session 17 > Reading 57 > LOS n

**Related Material:**

- Key Concepts by LOS
- 

## Question #36 of 62

Question ID: 415862

Which of the following statements about moneyness is *most* accurate? When the stock price is:

- ☐ A) below the strike price, a call option is in-the-money.
- ☒ B) above the strike price, a put option is out-of-the-money.
- ☐ C) above the strike price, a put option is in-the-money.

#### Explanation

When the stock price is above the strike price, a put option is *out-of-the-money*.

When the stock price is below the strike price, a call option is *out-of-the-money*.

#### References

**Question From:** Session 17 > Reading 57 > LOS j

**Related Material:**

- Key Concepts by LOS
- 

## Question #37 of 62

Question ID: 472444

If the price of a forward contract is greater than the price of an identical futures contract, the most likely explanation is that:

- ☒ A) the futures contract requires daily settlement.
- ☐ B) the futures contract is more difficult to exit.
- ☐ C) the forward contract is more liquid.

#### Explanation

The reason there may be a difference in price between a forward contract and an identical futures contract is that a futures position has daily settlement and so makes or requires cash flows during its life.

#### References

**Question From:** Session 17 > Reading 57 > LOS f

**Related Material:**

- Key Concepts by LOS



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## Question #38 of 62

Question ID: 415926

An increase in the riskless rate of interest, other things equal, will:

- ☐ A) decrease call option values and decrease put option values.
- ☐ B) decrease call option values and increase put option values.
- ☒ C) increase call option values and decrease put option values.

### Explanation

An increase in the risk-free rate of interest will increase call option values and decrease put option values.

### References

**Question From:** Session 17 > Reading 57 > LOS k

### **Related Material:**

- Key Concepts by LOS
- 

## Question #39 of 62

Question ID: 472439

During its life the value of a long position in a forward or futures contract:

- ☐ A) can differ in size from the value of the short position.
- ☐ B) is equal to the value of the short position.
- ☒ C) is opposite to the value of the short position.

### Explanation

The long and short positions in a forward or futures contract have opposite values. A gain for one is an equal-sized loss for the other.

### References

**Question From:** Session 17 > Reading 57 > LOS b

### **Related Material:**

- Key Concepts by LOS
- 

## Question #40 of 62

Question ID: 472440

As a forward contract approaches its expiration date, its value:

- ☒ A) depends on the price of the underlying asset.
- ☐ B) increases to the forward contract price.
- ☐ C) approaches zero.

### Explanation

The value of a forward contract is zero at initiation, and during its life its value depends on changes in the spot price of the underlying asset. At expiration its value is based on the difference between the spot price of the underlying asset and the price specified in the forward contract.

#### References

**Question From:** Session 17 > Reading 57 > LOS b

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #41 of 62**

Question ID: 415888

When calculating the payoff for a stock option, if the stock price is greater than the strike price at expiration:

- ☐ A) the payoff to a put option is equal to the strike price.
- ☒ B) the payoff to a call option is the difference between the stock price and the strike price.
- ☐ C) a call option expires worthless.

#### Explanation

If the stock price is greater than the strike price at expiration, the payoff to a call option on the stock equals the stock price minus the strike price, while a put option on the stock expires worthless.

#### References

**Question From:** Session 17 > Reading 57 > LOS j

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #42 of 62**

Question ID: 500878

A European call option on a stock has an exercise price of 42. On the expiration date, the stock price is 40. The value of the option at expiration is:

- ☒ A) zero.
- ☐ B) negative.
- ☐ C) positive.

#### Explanation

For a call option, the value at expiration is zero if the price of the underlying is less than or equal to the exercise price. The holder will allow the option to expire unexercised.

#### References

**Question From:** Session 17 > Reading 57 > LOS i

#### **Related Material:**

- Key Concepts by LOS

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## Question #43 of 62

Question ID: 472452

A synthetic European call option includes a short position in:

- ☐ A) the underlying asset.
- ☐ B) a European put option.
- ☒ C) a risk-free bond.

### Explanation

A synthetic European call option consists of a long position in the underlying asset, a long position in a European put option, and a short position in a risk-free bond (i.e., borrowing at the risk-free rate).

### References

**Question From:** Session 17 > Reading 57 > LOS I

### **Related Material:**

- Key Concepts by LOS

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## Question #44 of 62

Question ID: 500877

The price of a pay-fixed receive-floating interest rate swap is:

- ☐ A) negative when floating rates are highly volatile.
- ☒ B) determined by expected future short-term rates.
- ☐ C) zero when floating rates and fixed rates are equal.

### Explanation

The price of an interest rate swap refers to the fixed rate specified in the swap. This price is calculated as a function of expected future short-term rates.

### References

**Question From:** Session 17 > Reading 57 > LOS h

### **Related Material:**

- Key Concepts by LOS

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## Question #45 of 62

Question ID: 472445

One of the principal characteristics of swaps is that swaps:

- ☐ A) are highly regulated over-the-counter agreements.
- ☒ B) may be likened to a series of forward contracts.
- ☐ C) are standardized derivative instruments.

### Explanation

A swap agreement often requires that both parties agree to a series of transactions. Each transaction is similar to a forward contract, where a party is paying a fixed price to offset the risk associated with an unknown future value. Swaps are over-the-counter agreements but are not highly regulated. One of the benefits of swaps is that they can be customized to fit the needs of the counterparties. Thus, they are not standardized.

### References

**Question From:** Session 17 > Reading 57 > LOS g

**Related Material:**

- Key Concepts by LOS
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## Question #46 of 62

Question ID: 472443

The underlying instrument in a forward rate agreement is:

- ✓ **A)** an interest rate.
- X **B)** a fixed-income security.
- X **C)** an asset.

### Explanation

A forward rate agreement is a forward contract with an interest rate, such as 30-day LIBOR, as its underlying instrument.

### References

**Question From:** Session 17 > Reading 57 > LOS e

**Related Material:**

- Key Concepts by LOS
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## Question #47 of 62

Question ID: 492030

Which of the following is a nonmonetary benefit of holding an asset?

- X **A)** Dividends.
- ✓ **B)** Convenience yield.
- X **C)** Storage and insurance.

### Explanation

Convenience yield refers to the nonmonetary benefits of holding an asset. Dividends are a monetary benefit. Storage and insurance are costs of holding an asset.

### References

**Question From:** Session 17 > Reading 57 > LOS d

**Related Material:**

- Key Concepts by LOS
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### Question #48 of 62

Question ID: 415895

The intrinsic value of an option is equal to:

- ☐ A) the amount that it is in or out of the money.
- ☒ B) zero or the amount that it is in the money.
- ☐ C) its speculative value.

#### Explanation

The intrinsic value of an option is equal to the amount that it is in the money or zero, if it is out of the money. Option value equals speculative (time) value only for out-of-the-money options.

#### References

**Question From:** Session 17 > Reading 57 > LOS j

#### **Related Material:**

- Key Concepts by LOS
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### Question #49 of 62

Question ID: 415866

A call option that is in the money:

- ☐ A) has an exercise price greater than the market price of the asset.
- ☒ B) has an exercise price less than the market price of the asset.
- ☐ C) has a value greater than its purchase price.

#### Explanation

A call option is in the money when the exercise price is less than the market price of the asset.

#### References

**Question From:** Session 17 > Reading 57 > LOS j

#### **Related Material:**

- Key Concepts by LOS
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### Question #50 of 62

Question ID: 737799

It is possible to profit from arbitrage when there are no costs or benefits to holding the underlying asset and the forward contract price is:

- ☐ A) less than the present value of the spot price.
- ☐ B) greater than the present value of the spot price.

- ✓ **C)** less than the future value of the spot price.

#### Explanation

An opportunity for arbitrage exists if the forward price is not equal to the future value of the spot price, compounded at the risk-free rate over the period of the forward contract.

#### References

**Question From:** Session 17 > Reading 57 > LOS c

#### **Related Material:**

- Key Concepts by LOS
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### **Question #51 of 62**

Question ID: 415921

A fiduciary call is a portfolio that is made up of:

- X **A)** a call that is synthetically created from other instruments.
- ✓ **B)** a call option and a bond that pays the exercise price of the call at option expiration.
- X **C)** a call option and a share of stock.

#### Explanation

A fiduciary call combines a call option and a bond that pays the exercise price of the call at option expiration.

#### References

**Question From:** Session 17 > Reading 57 > LOS I

#### **Related Material:**

- Key Concepts by LOS
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### **Question #52 of 62**

Question ID: 500879

At expiration, the value of a European call option is:

- ✓ **A)** equal to its intrinsic value.
- X **B)** equal to the asset price minus the present value of the exercise price.
- X **C)** less than that of an otherwise identical American call option.

#### Explanation

The intrinsic value of a call, either European or American, at expiration is  $\text{Max}(0, S - X)$ , which is its intrinsic value. The asset price minus the present value of the exercise price can be negative, but options cannot have a negative value.

#### References

**Question From:** Session 17 > Reading 57 > LOS i

#### **Related Material:**

- Key Concepts by LOS

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## Question #53 of 62

Question ID: 756729

An analyst is determining the value of a put option with a one-period binomial model. Using an up-move size of 25% and a risk-free rate of 3%, the analyst calculates the following:

Down-move size = 0.80

Up-move probability = 0.51

Down-move probability = 0.49

Value after up-move = \$1.07

Value after down-move = \$5.01

Probability-weighted average =  $0.51(\$1.07) + 0.49(\$5.01) = \$3.00$

The analyst should determine that the value of the put option is:

- ☐ A) greater than \$3.00.
- ☒ B) less than \$3.00.
- ☐ C) equal to \$3.00.

### Explanation

The probability-weighted average is an estimate of the option's expected value after one period. To determine the option's value the analyst must discount this expected value by one period.

### References

**Question From:** Session 17 > Reading 57 > LOS n

### **Related Material:**

- Key Concepts by LOS

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## Question #54 of 62

Question ID: 492033

On the expiration date of a European put option, if the spot price of the underlying asset is less than the exercise price, the value of the option is:

- ☐ A) negative.
- ☐ B) zero.
- ☒ C) positive.

### Explanation

Put options are in the money (have positive value) at expiration if the spot price of the underlying asset is less than the exercise price, because the put option holder has the right to sell the asset for the higher exercise price. The value of an option cannot be negative; at expiration its value is the greater of zero or its intrinsic value.

## References

**Question From:** Session 17 > Reading 57 > LOS i

### **Related Material:**

- Key Concepts by LOS
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## **Question #55 of 62**

Question ID: 415868

Bidco Corporation common stock has a market value of \$30.00. Which statement about put and call options available on Bidco common is *most* accurate?

- ☐ A) A put with a strike price of \$20.00 has intrinsic value.
- ☒ B) A put with a strike price of \$35.00 is in-the-money.
- ☐ C) A call with a strike price of \$25.00 is at-the-money.

### Explanation

A put is in-the-money when its exercise price is higher than the market value of the underlying asset. A put with a \$35.00 strike price allows the trader to sell 100 shares of stock for \$35.00 per share, which is \$5.00 higher than the prevailing market value. This gives the put a value, hence, it is in-the-money. For a call to be in-the-money, its strike price would have to be lower than the market value of the underlying common stock, allowing the trader to purchase 100 shares at a price below the prevailing market value. At-the-money is when the strike price and asset market value are equal. A put with a strike price of \$20.00 does not have intrinsic value because it is below the \$30 price of the stock. It does have time value meaning it is worth something because there is the possibility the put will come into the money before it expires.

## References

**Question From:** Session 17 > Reading 57 > LOS j

### **Related Material:**

- Key Concepts by LOS
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## **Question #56 of 62**

Question ID: 492026

Which of the following *most accurately* states an example of replication in derivatives pricing?

- ☐ A) Risky asset + risk-free asset = (- derivative position).
- ☒ B) Risky asset + derivative = risk-free asset.
- ☐ C) Derivative position - risk-free asset = risky asset.

### Explanation

Replications of future payoffs, composed of a risky asset, a risk-free asset, and a derivative on the risky asset, are as follows:

Risky asset + derivative = risk-free asset

Risky asset - risk-free asset = (- derivative position)

Derivative position - risk-free asset = (- risky asset).



## References

**Question From:** Session 17 > Reading 57 > LOS a

### **Related Material:**

- Key Concepts by LOS
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## **Question #57 of 62**

Question ID: 496436

Compared to an American call option on a stock that does not pay a dividend, an otherwise identical European call option will have:

- ☐ A) a higher value.
- ☒ B) the same value.
- ☐ C) a lower value.

### Explanation

For call options on an underlying asset that does not pay cash flows, the right to exercise early is not valuable and therefore American and European options that are otherwise identical will have the same value.

## References

**Question From:** Session 17 > Reading 57 > LOS o

### **Related Material:**

- Key Concepts by LOS
- 

## **Question #58 of 62**

Question ID: 472446

For a series of forward contracts to replicate a swap contract, the forward contracts must have:

- ☒ A) values at swap initiation that sum to zero.
- ☐ B) values at swap initiation that are equal to zero.
- ☐ C) values at swap expiration that sum to zero.

### Explanation

When replicating a swap with a series of forward contracts, each forward contract is likely to be off-market (i.e., have a non-zero value at initiation), but they can replicate a swap with a value of zero at initiation if the values of the forward contracts sum to zero at swap initiation.

## References

**Question From:** Session 17 > Reading 57 > LOS g

### **Related Material:**

- Key Concepts by LOS
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## Question #59 of 62

Question ID: 472442

Other things equal, the no-arbitrage forward price of an asset will be higher if the asset has:

- ✓ **A)** storage costs.
- X **B)** convenience yield.
- X **C)** dividend payments.

### Explanation

Costs of holding an asset increase its no-arbitrage forward price. Benefits from holding the asset, such as dividends or convenience yield, decrease its no-arbitrage forward price.

### References

**Question From:** Session 17 > Reading 57 > LOS d

### **Related Material:**

- Key Concepts by LOS
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## Question #60 of 62

Question ID: 472455

Which of the following statements about American and European options is most accurate?

- X **A)** There will always be some price difference between American and European options because of exchange-rate risk.
- ✓ **B)** Prior to expiration, an American option may have a higher value than an equivalent European option.
- X **C)** European options allow for exercise on or before the option expiration date.

### Explanation

American and European options both give the holder the right to exercise the option at expiration. An American option also gives the holder the right of early exercise, so American options will be worth more than European options when the right to early exercise is valuable, and they will have equal value when it is not.

### References

**Question From:** Session 17 > Reading 57 > LOS o

### **Related Material:**

- Key Concepts by LOS
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## Question #61 of 62

Question ID: 415896

A call option's intrinsic value:

- X **A)** decreases as the stock price increases above the strike price, while a put option's intrinsic value increases as the stock price decreases below the strike price.

- X **B)** increases as the stock price increases above the strike price, while a put option's intrinsic value decreases as the stock price decreases below the strike price.
- ✓ **C)** increases as the stock price increases above the strike price, while a put option's intrinsic value increases as the stock price decreases below the strike price.

#### Explanation

For a call option, as the underlying stock price increases above the strike price, the option moves farther into the money, and the intrinsic value is increasing. For a put option, as the underlying stock price decreases below the strike price, the option moves farther into the money, and the intrinsic value is increasing.

#### References

**Question From:** Session 17 > Reading 57 > LOS k

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #62 of 62**

Question ID: 415887

The payoff of a call option on a stock at expiration is equal to:

- ✓ **A)** the maximum of zero and the stock price minus the exercise price.
- X **B)** the minimum of zero and the stock price minus the exercise price.
- X **C)** the maximum of zero and the exercise price minus the stock price.

#### Explanation

The payoff on a call option on a stock is  $\text{Max}(0, S - X)$ .

#### References

**Question From:** Session 17 > Reading 57 > LOS j

#### **Related Material:**

- Key Concepts by LOS