

58. Use put-call parity to relate the initial investment for a bull spread created using calls to the initial investment for a bull spread created using puts.
59. Suppose that put options on a stock with strike prices \$30 and \$35 cost \$4 and \$7, respectively. How can the options be used to create (a) a bull spread and (b) a bear spread? Graph the profit function for both spreads. For both spreads, give the range of stock prices that would lead to a positive profit.
60. Three put options on a stock have the same expiration date and strike prices of \$55, \$60, and \$65 and market prices \$3, \$5, and \$8. Explain how a butterfly spread can be created. Graph the profit function from the strategy. For what range of stock prices would the butterfly spread lead to a gain?
61. Draw graphs showing the variation of an investor's profit and loss with terminal stock price for a portfolio consisting of:
- (a) One share and a short position in one call option.
  - (b) One share and a short position in two call options. Assume  $2c > S_0$ .
  - (c) One share and a short position in four call options. Assume  $4c > S_0$ .
  - (d) Two shares and a short position in one call option.
- In each case, assume that the call option has an exercise price equal to the current stock price. In each case, give the range of stock prices that would lead to a positive profit.
62. Use put-call parity to show that the cost of a butterfly spread created from European puts is identical to the cost of a butterfly spread created from European calls.
63. A call option with a strike price of \$50 costs \$2. A put option with a strike price of \$45 costs \$3. Explain how a strangle can be created from these two options. Graph the profit function from the strangle. For what range of stock prices would the strangle lead to a loss?