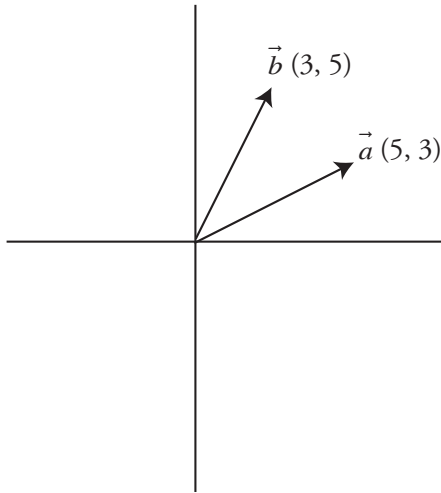


Comprehensive Miscellaneous Drill

The answers can be found in Part IV.



7. If $\vec{c} = \vec{a} - \vec{b}$, then what are the components of \vec{c} ?
- (A) (8, 8)
(B) (-2, -2)
(C) (2, 2)
(D) (-8, 8)
(E) (2, -2)
10. $|10 - 24i| =$
- (A) -14
(B) 13
(C) 24
(D) 26
(E) 676
17. Which of the following describes the line equidistant from $f(x) = (x - 2)^2 + 3$ and $g(x) = -(x - 2)^2 - 4$?
- (A) $x = 3.5$
(B) $y = 0.5$
(C) $y = -0.5$
(D) $x = -1$
(E) $y = (x - 2)^2 - 0.5$
22. $\lim_{x \rightarrow 2} \frac{x^3 + x^2 - 6x}{x^2 - 5x + 6} =$
- (A) -10
(B) -3
(C) 0
(D) 10
(E) The limit does not exist
26. $\log \frac{x^3 y}{z} =$
- (A) $3(\log x + \log y - \log z)$
(B) $\frac{\log x + \log y - \log z}{3}$
(C) $3 \log(x + y - z)$
(D) $\log 3x + \log y - \log z$
(E) $3 \log x + \log y - \log z$
29. If $\log_7 x = 14$, then $\log_{14} x =$
- (A) 1.356
(B) 1.991
(C) 2.000
(D) 8.023
(E) 10.323
31. What is the quotient when $2x^5 - 3x^4 - 6x^3 + 23x^2 - 25x + 6$ is divided by $2x - 3$?
- (A) $x^4 - 3x^2 + 7x - 2$
(B) $x^4 + x^3 - 3x^2 + 7x - 2$
(C) $x^3 - 3x^2 + 7x - 2$
(D) $x^4 + 6$
(E) $x^4 + 3x^2 + 7x$

Albert: Double-breasted suits always cost at least \$500.

Bethany: But if the customer ordered a double-breasted suit, then the suit won't be ready until after Monday.

Carl: Also, all double-breasted suits are navy blue.

Diana: Don't worry, the customer's suit will be ready on Monday.

32. If all of Albert, Bethany, Carl, and Diana's statements are true, then which of the following must be true?

- (A) The customer's suit will not be navy blue.
- (B) Diana is a better tailor than Albert, Bethany, or Carl.
- (C) The customer's suit will cost less than \$500.
- (D) The customer did not order a double-breasted suit.
- (E) If the suit costs at least \$500, then the customer ordered a double-breasted suit.

39. If $\begin{bmatrix} 0 & 0 \\ 2 & 2 \end{bmatrix} \times \begin{bmatrix} x & y \\ z & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$, then which of the fol-

lowing must be true?

- I. $x = 0$
 - II. $y = 0$
 - III. $x = -z$
- (A) I only
 - (B) II only
 - (C) I and II only
 - (D) II and III only
 - (E) I, II, and III

44. $\sum_{n=1}^{\infty} 7((-0.5)^{n-1}) =$

- (A) -14
- (B) 0
- (C) 4.667
- (D) 14
- (E) Infinitely large

45. In an arithmetic sequence, the sum of the first 11 terms is 440 and the constant difference between terms is 4. Which of the following is the first term?

- (A) 18
- (B) 19
- (C) 20
- (D) 21
- (E) 22