Chapter **Test Prep**

1. Which statement about the product *AB* is true?

$$A = \begin{bmatrix} 1 & 2 & 6 \\ 0 & 3 & 2 \end{bmatrix} \text{ and } B = \begin{bmatrix} 1 & 5 \\ 3 & 0 \\ 3 & 2 \end{bmatrix}$$

- (A) The product *AB* is not defined.
- (B) The product AB is defined and is a 2×2 matrix with all positive elements.
- ⓒ The product AB is defined and is a 3×2 matrix with all negative elements.
- **(D)** The product AB is defined and is a 2×3 matrix with all nonnegative elements.
- **2.** A spinner is divided into equal parts. Find the probability that you get a number less than 3 on your first spin and an even number on your second spin. Let event A be "less than 3 on first spin" and let event *B* be "even number on second spin." Give your answer as a decimal.





- **3.** One term of a geometric sequence is $a_{10} = 750$. The common ratio is 0.1. What is another term of the sequence?
 - (A) $a_7 = 0.075$
 - (B) $a_8 = 750,000$
 - $\bigcirc a_{12} = 75,000$
 - (D) $a_{13} = 0.75$

4. For what value of *k* is the determinant of

$$\begin{bmatrix} 5 & -1 \\ k^2 & k \end{bmatrix}$$
 equal to 6?
(A) $k = -1$
(B) $k = 0$
(C) $k = 1$
(D) $k = 6$

(



(3, 3)

2

square units

(4, 0)

- 7. The function C(x) = 20x + 50 represents the cost (in dollars) of producing x specialized lapel pins. The number of pins produced in t minutes is represented by x(t) = 2t. Evaluate C(x(3)) and explain what it represents.
 - (A) C(x(3)) = 110; It represents the number of pins produced in 3 minutes.
 - (B) C(x(3)) = 170; It represents the number of pins produced in 6 minutes.
 - ⓒ C(x(3)) = 110; It represents the cost to produce 3 pins.
 - (b) C(x(3)) = 170; It represents the cost to produce 6 pins.
- 8. Let the graph of g be a vertical stretch by a factor of 3, followed by a translation 2 units up of the graph of $f(x) = x^2$. Which of the following is an equation for g(x)?
 - (A) $g(x) = 3x^2 + 2$
 - (B) $g(x) = 2x^2 + 3$
 - $\bigcirc g(x) = 9x^2 + 2$
 - $\bigcirc g(x) = \frac{1}{3}x^2 + 2$



9. Select all the matrices for which the inverse is defined.

$$\begin{array}{c}
\left(A \right) \begin{bmatrix} 4 & -2 \\ 7 & 6 \end{bmatrix} \\
\left(B \right) \begin{bmatrix} 1 & 3 \\ 2 & 6 \end{bmatrix} \\
\left(C \right) \begin{bmatrix} 8 & -4 \\ 4 & 2 \end{bmatrix} \\
\left(D \right) \begin{bmatrix} -1 & 5 \\ -1 & 0 \end{bmatrix}$$

10. Which equation represents the parabola?

(A) $f(x) = -\frac{1}{16}x^2$ (B) $f(x) = -\frac{1}{4}x^2 + 2$ (C) $f(x) = 4 - \frac{1}{8}x^2$ (D) $f(x) = -\frac{1}{8}x^2 + 2$



11. The students in two classes submit apparel choices for an upcoming homecoming parade. The matrix on the left represents the number of each apparel item ordered for each class. The matrix on the right represents the cost of each apparel item. Find the total cost of apparel for Class A.

	Apparel Selection			Cost	
	Beanie	Shirt	Hoodie	l	Dollars
Class A Class B	[10	4	12	Beanie	9
	_10	6	9	Shirt	15
				Hoodie	20





- 12. The area of a rectangle is 50 square units. The length of the rectangle is (x + 7) units and the width is
 - (x + 2) units. Find x.
 - (A) x = -12
 - (B) x = -3
 - (c) x = 3
 - (D) x = 12

13. Select all expressions that are equivalent to $4 \ln x - 3 \ln 2$.

(A)
$$\ln \frac{x^4}{8}$$

(B) $\frac{4}{3} \ln x^2$
(C) $\ln x^4 - \ln 8$
(D) $\frac{\ln x^4}{\ln 8}$
(E) $\ln(x^4 - 8)$

14. Which graph represents the function $f(x) = 5\sin(x - \pi)$?



15. Four spherical oranges fit tightly into a gift box. Find the percent of the volume of the box that is occupied by the oranges. Use 3.14 for π and round your answer to the nearest tenth of a percent.

