

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## EOC Practice Problems

1. Which expression is equivalent to  $121x^2 - 64y^2$ ?
    - A.  $(11x - 16y)(11x + 16y)$
    - B.  $(11x - 16y)(11x - 16y)$
    - C.  $(11x + 8y)(11x + 8y)$
    - D.  $(11x + 8y)(11x - 8y)$

---

  2. What is a common factor for the expression  $24x^2 + 16x + 144$ ?
    - A. 16
    - B.  $8x$
    - C.  $3x^2 + 2x + 18$
    - D.  $8(x - 2)(3x^2 + 9)$

---

  3. Which of these shows the complete factorization of  $6x^2y^2 - 9xy - 42$ ?
    - A.  $3(2xy^2 - 7)(xy^2 + 2)$
    - B.  $(3xy + 6)(2xy - 7)$
    - C.  $3(2xy - 7)(xy + 2)$
    - D.  $(3xy^2 + 6)(2xy^2 - 7)$

---

  4. What are the zeros of the function represented by the quadratic expression  $2x^2 + x - 3$ ?
    - A.  $x = -3/2$  and  $x = 1$
    - B.  $x = -2/3$  and  $x = 1$
    - C.  $x = -1$  and  $x = 2/3$
    - D.  $x = -1$  and  $x = -3/2$

---

  5. What is the vertex of the graph of  $f(x) = x^2 + 10x - 9$ ?
    - A. (5, 66)
    - B. (5, -9)
    - C. (-5, -9)
    - D. (-5, -34)

---

  6. Which of these is the result of completing the square for the expression  $x^2 + 8x - 30$ ?
    - A.  $(x+4)^2 - 30$
    - B.  $(x+4)^2 - 46$
    - C.  $(x+8)^2 - 30$
    - D.  $(x+8)^2 - 94$

---

  7. The expression  $-x^2 + 70x - 600$  represents a company's profit for selling  $x$  items. For which number(s) of items sold is the company's profit equal to \$0?
    - A. 0 items
    - B. 35 items
    - C. 10 items and 60 items
    - D. 20 items and 30 items

---

  8. The formula for the area of a circle is  $A = \pi r^2$ . Which equation shows the formula in terms of  $r$ ?
    - A.  $r = \frac{2A}{\pi}$
    - B.  $r = \frac{\sqrt{A}}{\pi}$
    - C.  $r = \sqrt{\frac{A}{\pi}}$
    - D.  $r = \frac{A}{2\pi}$

---

9. What are the solutions to the equation  $2x^2 - 2x - 12 = 0$ ?

A.  $x = -4, x = 3$

B.  $x = -3, x = 4$

C.  $x = -2, x = 3$

D.  $x = -6, x = 2$ 

---

10. What are the solutions to the equation  $6x^2 - x - 40 = 0$

A.  $x = -8/3, x = -5/2$

C.  $x = -8/3, x = 5/2$

B.  $x = 5/2, x = 8/3$

D.  $x = -5/2, x = 8/3$ 

---

11. What are the solutions to the equation  $x^2 - 5x = 14$

A.  $x = -7, x = -2$

C.  $x = -2, x = 7$

B.  $x = -14, x = -1$

D.  $x = -1, x = 14$ 

---

12. An object is thrown in the air with an initial velocity of 5 m/s from a height of 9m. The equation  $h(t) = -4.9t^2 + 5t + 9$  models the height of the object in meters after  $t$  seconds.

About how many seconds does it take for the object to hit the ground? Round your answer to the nearest tenth of a second.

A. 0.940 secs

B. 1.50 secs

C. 2.00 secs

D. 9.00 secs

---

13. What explicit expression can be used to find the next term in this sequence?

2, 8, 18, 32, 50, ...

A.  $2n$

B.  $2n + 6$

C.  $2n^2$

D.  $2n^2 + 1$ 

---

14. The function  $s(t) = vt + h - 0.5at^2$  represents the height of an object,  $s$ , in feet, above the ground in relation to the time,  $t$ , in seconds, since the object was thrown into the air with an initial velocity of  $v$  feet per second at an initial height of  $h$  feet and where  $a$  is the acceleration due to gravity (32 feet per second squared).

A baseball player hits a baseball 4 feet above the ground with an initial velocity of 80 feet per second. About how long will it take the baseball to hit the ground?

A. 2 secs

B. 3 secs

C. 4 secs

D. 5 secs

---

15. A café's annual income depends on  $x$ , the number of customers. The function  $I(x) = 4x^2 - 20x$  describes the café's total annual income. The function  $C(x) = 2x^2 + 5$  describes the total amount the café spends in a year. The café's annual profit,  $P(x)$ , is the difference between the annual income and the amount spent in a year.

Which function describes  $P(x)$ ?

A.  $P(x) = 2x^2 - 20x - 5$

C.  $P(x) = 6x^2 - 20x + 5$

B.  $P(x) = 4x^3 - 20x^2$

D.  $P(x) = 8x^4 - 40x^3 - 20x^2 - 100x$ 

---

---

16. Which statement BEST describes the graph of  $f(x+6)$ ?

- A. The graph of  $f(x)$  is shifted up 6 units.
- B. The graph of  $f(x)$  is shifted left 6 units.
- C. The graph of  $f(x)$  is shifted right 6 units.
- D. The graph of  $f(x)$  is shifted down 6 units.

---

17. Which of these is an even function?

- A.  $f(x) = 5x^2 - x$
- B.  $f(x) = 3x^3 + x$
- C.  $f(x) = 6x^2 - 8$
- D.  $f(x) = 4x^3 + 2x^2$

---

18. Which statement BEST describes how the graph of  $g(x) = -3x^2$  compares to the graph of  $f(x) = x^2$ ?

- A. The graph of  $g(x)$  is a vertical stretch of  $f(x)$  by a factor of 3.
- B. The graph of  $g(x)$  is a reflection of  $f(x)$  across the x-axis.
- C. The graph of  $g(x)$  is a vertical shrink of  $f(x)$  by a factor of  $1/3$  and a reflection across the x-axis.
- D. The graph of  $g(x)$  is a vertical stretch of  $f(x)$  by a factor of 3 and a reflection across the x-axis.

---

19. A flying disk is thrown into the air from a height of 25 feet at time  $t = 0$ . The function that models this situation is  $h(t) = -16t^2 + 75t + 25$ , where  $t$  is measured in seconds and  $h$  is the height in feet. What values of  $t$  best describe the time when the disk is flying in the air?

- A.  $0 < t < 5$
- B.  $0 < t < 25$
- C. All real numbers
- D. All positive integers

$x$	$f(x)$
-2	15
-1	9
0	5
1	3
2	3

---

20. Use the table to answer the question.

What is the average rate of change of  $x$  over the interval  $-2 \leq x \leq 0$ ?

- A. -10
- B. -5
- C. 5
- D. 10

---

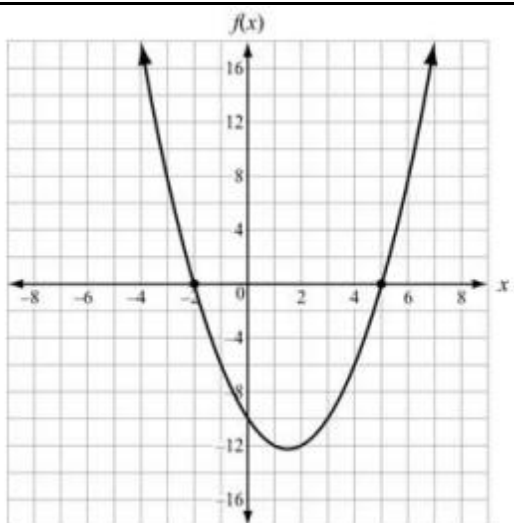
21. What is the end behavior of the graph of  $f(x) = -0.25x^2 - 2x + 1$ ?

- A. As  $x$  increases,  $f(x)$  increases. As  $x$  decreases,  $f(x)$  decreases.
  - B. As  $x$  increases,  $f(x)$  decreases. As  $x$  decreases,  $f(x)$  decreases.
  - C. As  $x$  increases,  $f(x)$  increases. As  $x$  decreases,  $f(x)$  increases.
  - D. As  $x$  increases,  $f(x)$  decreases. As  $x$  decreases,  $f(x)$  increases.
-

22. Use the graph to answer the question.

Which function is shown in the graph?

- A.  $f(x) = x^2 - 3x - 10$
- B.  $f(x) = x^2 + 3x - 10$
- C.  $f(x) = x^2 + x - 12$
- D.  $f(x) = x^2 - 5x - 8$



23. The function  $f(t) = -16t^2 + 64t + 5$  models the height of a ball that was hit into the air, where  $t$  is measured in seconds and  $h$  is the height in feet. This table represents the height,  $g(t)$ , of a second ball that was thrown into the air.

Which statement BEST compares the length of time each ball is in the air?

- A. The ball represented by  $f(t)$  is in the air for about 5 seconds, and the ball represented by  $g(t)$  is in the air for about 3 seconds.
- B. The ball represented by  $f(t)$  is in the air for about 3 seconds, and the ball represented by  $g(t)$  is in the air for about 5 seconds.
- C. The ball represented by  $f(t)$  is in the air for about 3 seconds, and the ball represented by  $g(t)$  is in the air for about 4 seconds.
- D. The ball represented by  $f(t)$  is in the air for about 4 seconds, and the ball represented by  $g(t)$  is in the air for about 3 seconds.

Time, $t$ (in seconds)	Height, $g(t)$ (in feet)
0	4
1	36
2	36
3	4