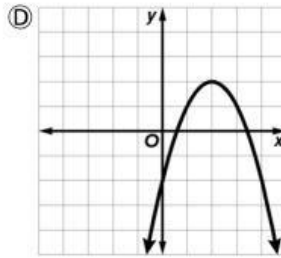
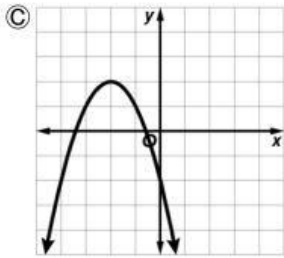
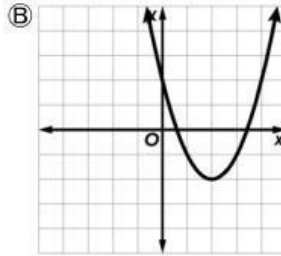
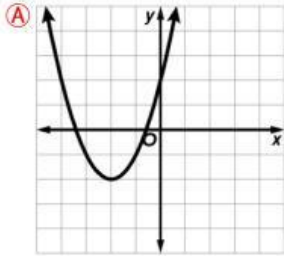


Module Test Form A1

Quadratic Functions

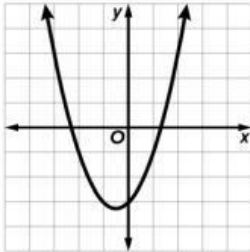
1. Which is the graph of $f(x) = x^2 + 4x + 2$?



2. What is the average rate of change of the function $f(x) = 4x^2 + 3x$ on the interval $[1, 5]$?

The average rate of change is 27.

3. Use the graph to find all the solutions of $x^2 + x - 3 = 0$.



Select all the pairs of consecutive integers between which the roots are located.

- (A) between -3 and -2 (B) between -2 and -1 (C) between -1 and 0
 (D) between 0 and 1 (E) between 1 and 2 (F) between 2 and 3

4. Simplify $\sqrt{-25} \times \sqrt{-81}$. -45
5. What are the solutions of $x^2 + 16 = 0$? Select all that apply.
 A $4i$
 B $-4i$
 C 4
 D -4
 E -16
 F $16i$
6. Which of the following expressions is the factored form of $x^2 + 25$?
 A $(x + 5)(x + 5)$
 B $(x - 5i)(x - 5i)$
 C $(x + 5i)(x - 5i)$
 D $(x + 5i)(x + 5i)$
7. **ELECTRICITY** What is the voltage V of an electronic circuit with a current C of $2 - j$ and an impedance I of $3 + 2j$? Use the formula $V = CI$.
 A $8 + j$
 B $6 - 2j$
 C $4 + j$
 D $5 + j$

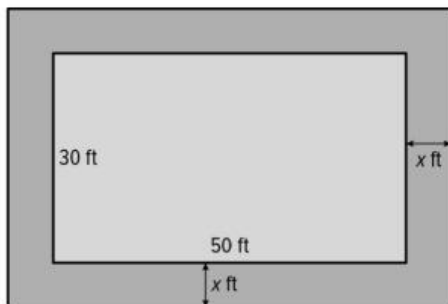
8. Factor and solve the quadratic equation.

$$x^2 + 8x - 20 = 0$$

The factored equation is: [A $(x - 10)(x + 2) = 0$ B $(x + 10)(x - 2) = 0$]

The solutions are: [A $x = -10$ B $x = 10$] or [A $x = -2$ B $x = 2$]

9. **PARK** A lawn in a city park is 50 feet long and 30 feet wide. A path with a width of x feet will be placed around the park. The city has enough paving material to cover a path with an area of 900 square feet.



How wide should the path be to use all of the paving material?

5 feet

10. Use the square root property to find the solutions of $x^2 - 12x + 36 = 64$.

$x = [\text{A } -2 \text{ B } -6 \text{ C } -8 \text{ D } -14]$ or $x = [\text{A } 2 \text{ B } 6 \text{ C } 8 \text{ D } 14]$

11. What value of c makes $x^2 + 36x + c$ a perfect square?

- A 72
 B 324
 C 2178
 D 1296

12. Solve $x^2 - 8x = 1$ by completing the square.

 $x = 4 \pm \sqrt{17}$

13. Use the quadratic formula to solve $5x^2 + 3x - 1 = 0$.

- A $\frac{-3 \pm \sqrt{29}}{10}$
 B $\frac{3 \pm \sqrt{29}}{10}$
 C $\frac{-3 \pm i\sqrt{11}}{10}$
 D $\frac{3 \pm i\sqrt{11}}{10}$

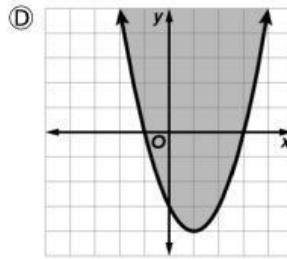
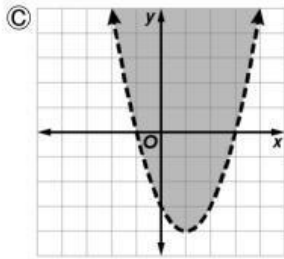
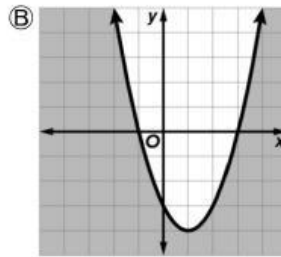
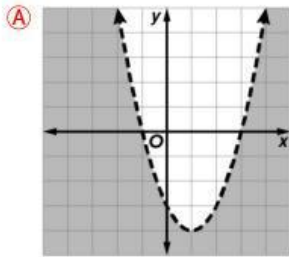
14. Use the discriminant to describe the number of solutions of the equation $2x^2 + 5x - 12 = 0$.

- A The discriminant is 121, and the equation has two real, rational roots.
 B The discriminant is 121, and the equation has one real, rational root.
 C The discriminant is -71 , and the equation has two real, irrational roots.
 D The discriminant is -71 , and the equation has two complex roots.

15. **PROJECTILE** An arrow is launched upwards. The height of the arrow, in meters, after t seconds can be modeled by the function $h(t) = -4.9t^2 + 100t + 1$. After how many seconds will the arrow first reach an altitude of 100 meters? Round to the nearest hundredth of a second.

- A 1.04 seconds
 B 2.09 seconds
 C 19.37 seconds
 D 20.42 seconds

16. Which of these graphs represents the solution set of $y < x^2 - 2x - 3$?



17. What is the solution set of $-x^2 + 2x \geq 0$?

- (A) $[0, 2]$
- (B) $(0, 2)$
- (C) $(-\infty, 0) \cup (2, \infty)$
- (D) $(-\infty, 0] \cup [2, \infty)$

18. **VIDEO GAMES** A video game developer determines that the profit, in thousands of dollars, from a new video game can be modeled by the function $P(x) = -2x^2 + 130x - 2000$ when x is the price of each game. The game will be profitable if $P(x) > 0$.

To make the game profitable, the price should be at least \$ 25 and no more than \$ 40.

19. Solve this system of equations. Write the solution(s) as ordered pairs.

$$x^2 + y = 10$$

$$2x + y = 2$$

$(-2, 6)$ and $(4, -6)$

20. What are the solutions of this system? Select all that apply.

$$y + 3x^2 = 32$$

$$y = x^2 - 4$$

- | | |
|----------------|----------------|
| (A) $(5, -3)$ | (B) $(3, 5)$ |
| (C) $(-3, -5)$ | (D) $(-5, -3)$ |
| (E) $(-3, 5)$ | (F) $(3, -5)$ |
| (G) $(-5, 3)$ | (H) $(5, 3)$ |