



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

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

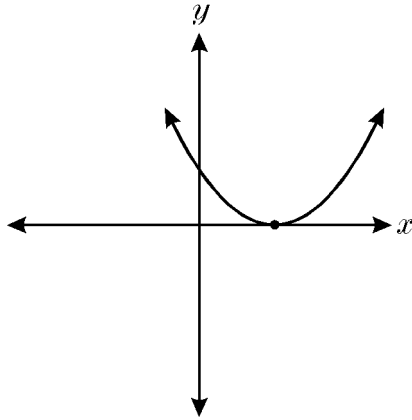
Show ALL work on a separate sheet of paper and attach it to the study guide

1. Simplify:  $(3x^2 - 5x + 9) + (7x^2 + 8x - 15)$
- (A)  $10x^2 + 3x - 6$       (B)  $10x^2 + 3x + 6$   
 (C)  $10x^2 - 3x + 6$       (D)  $10x^2 - 13x - 24$
2. Simplify:  $(4x^2 - 3x + 8) - (3x^2 - 5)$
- (A)  $x^2 - 3x - 3$       (B)  $x^2 - 3x + 3$   
 (C)  $x^2 - 3x + 13$       (D)  $7x^2 - 3x + 13$
3. Simplify:  $(5b^3 - 2b^2 - 9) - (4b^2 + 6b - 1)$
- (A)  $b^3 - 4b - 10$       (B)  $b^3 - 8b^2 - 10$   
 (C)  $b^3 - 8b^2 - 8$       (D)  $5b^3 - 6b^2 - 6b - 8$
4. Simplify:  $(2x - 3)(5x + 1)$
- (A)  $7x^2 - 15x - 2$       (B)  $10x^2 + 2x - 3$   
 (C)  $10x^2 - 13x - 3$       (D)  $10x^2 - 15x - 3$
5. Multiply:  $(3x + 1)(x - 4)$
- (A)  $3x^2 - 11x - 4$       (B)  $6x^2 + 13x - 4$   
 (C)  $3x^2 - 4$       (D)  $6x^2 + 11x + 4$
6. Multiply:  $(3x + 2)(9x^2 - 6x + 4)$
- (A)  $27x^3 + 12x^2 - 18x + 8$   
 (B)  $27x^3 + 8$   
 (C)  $27x^3 + 36x^2 + 54x + 8$   
 (D)  $27x^3 - 36x^2 - 54x + 8$
7. Multiply:  $(2x^2 + 3x - 4)(2x + 5)$
- (A)  $4x^3 + 16x^2 + 7x - 20$   
 (B)  $4x^3 + 16x^2 + 7x + 20$   
 (C)  $4x^3 + 16x^2 - 7x - 20$   
 (D)  $4x^3 + 16x^2 - 23x - 20$
8. Solve:  $x^2 - 25 = 0$
- (A)  $\{5, -5\}$       (B)  $\{0, 5\}$   
 (C)  $\{0, -5\}$       (D)  $\{1, 25\}$
9. Solve:  $3x^2 = 48$
- (A)  $\{4, -4\}$       (B)  $\{0, 8\}$   
 (C)  $\{0, -8\}$       (D)  $\{4, 16\}$
10. What are the solutions of the equation  $(y - 3)(y - 6) = 0$ ?
- (A)  $y = -3$  and  $y = 6$       (B)  $y = -3$  and  $y = -6$   
 (C)  $y = 0$  and  $y = 2$       (D)  $y = 3$  and  $y = 6$
11. What are the solutions of the equation  $(x + 4)(x - 15) = 0$ ?
- (A)  $\{4, 15\}$       (B)  $\{4, -15\}$   
 (C)  $\{-4, 15\}$       (D)  $\{-4, -15\}$
12. Solve:  $(n - 9)(4n + 1) = 0$
- (A)  $\{-\frac{1}{4}, 9\}$       (B)  $\{\frac{1}{4}, -9\}$   
 (C)  $\{\frac{1}{4}, 0\}$       (D)  $\{\frac{1}{4}, 9\}$

13. Solve:  $(10y - 15)(5y + 12) = 0$

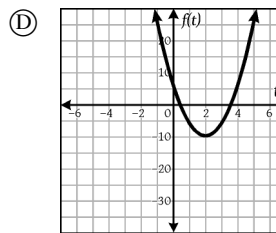
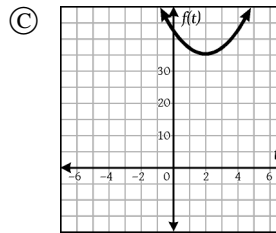
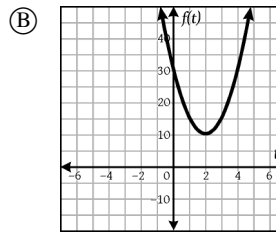
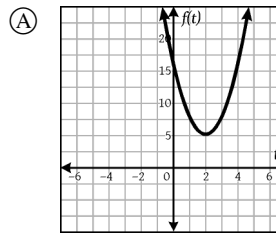
- (A)  $\{\frac{2}{3}, -\frac{5}{12}\}$       (B)  $\{\frac{3}{2}, -\frac{12}{5}\}$   
 (C)  $\{-\frac{2}{3}, \frac{5}{12}\}$       (D)  $\{-\frac{3}{2}, \frac{12}{5}\}$

14. How many solutions are shown by the graph of the quadratic function?

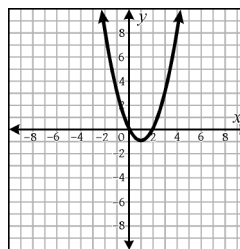


- (A) zero    (B) one    (C) two    (D) three

15. Which of the following represents the graph of  $f(t) = 3t^2 - 12t + 17$ ?



16. State the vertex and  $x$ -intercept(s) of the given graph.



- (A) vertex:  $(1, -1)$   $x$ -intercept(s): 1  
 (B) vertex:  $(-1, -1)$   $x$ -intercept(s): 0  
 (C) vertex:  $(1, -1)$   $x$ -intercept(s): 0, 2  
 (D) vertex:  $(0, -1)$   $x$ -intercept(s): 2

17. Solve:  $x^2 + 5x - 6 = 0$

- (A) -1, 6                      (B) 1, -6  
(C) -2, -3                    (D) 1, 5

18. Solve:  $x^2 - 7x + 12 = 0$

- (A) -1, 6                      (B) -1, -6  
(C) 3, 4                        (D) -3, -4

19. Solve:  $x^2 + 4x = 12$

- (A) 12, 1   (B) 6, 2   (C) -4, 3   (D) -6, 2

20. Solve:  $x^2 - x = 12$

- (A) 6, 2                      (B) -3, 4  
(C) -6, 2                    (D) -12, 1

21. What are the approximate roots of this equation?

$$x^2 - 6x + 4 = 0$$

- (A) {-6.6, 0.6}              (B) {-5.24, -0.76}  
(C) {0.8, 5.2}                (D) {3, 5}

22. Use the graphing calculator to find the solution(s) of  $x^2 - 3x = x - 7$  to the nearest tenth.

- (A) {-5.3, 1.3}              (B) {5.3}  
(C) {-1.3, 5.3}              (D) no real solutions

23. Use the graphing calculator to find the solution(s) of  $x^2 - 2x = x + 5$  to the nearest tenth.

- (A) {1.2}                      (B) {-4.2}  
(C) {-4.2, 1.2}              (D) {-1.2, 4.2}

24. Find the value of the discriminant of the quadratic equation  $3x^2 + 2x + 1 = 0$ .

- (A) -8                      (B) 16                      (C) 8                      (D) -16

25. Find the value of the discriminant of the quadratic equation  $2x^2 - 3x + 3 = 0$ .

- (A) -33                      (B) -15                      (C) 15                      (D) 33

26. Which quadratic equation has only one root?

- (A)  $x^2 + 3x + 2 = 0$               (B)  $x^2 - 10x + 25 = 0$   
(C)  $x^2 + 8x - 20 = 0$               (D)  $x^2 - 10x + 9 = 0$

27. Assume you are given the equation  $y = ax^2 + bx + c$  and you know that:

- $a$ ,  $b$ , and  $c$  are integers; and
- the equation has two distinct roots which are both integers.

You may reasonably conclude that the discriminant of the equation,  $b^2 - 4ac$ , is:

- (A) equal to zero  
(B) a square number  
(C) any positive integer  
(D) an imaginary number

28. Cole kicked a football. The equation  $h = -16t^2 + 60t$  describes the height of the ball  $t$  minutes after it was kicked. Approximately how many seconds went by before the ball hit the ground?

- (A) 2.9 seconds              (B) 3.2 seconds  
(C) 3.5 seconds              (D) 3.8 seconds

29. The area of a particular right triangle is given by the formula  $s(s + 2) = 255$ , where  $s$  is the length of the smallest side in centimeters. What is the length of the smallest side?

- (A) 10 cm                      (B) 14 cm                      (C) 15 cm                      (D) 16 cm

30. The cost of a pizza with “the works” is given as a function of its diameter. The relationship is

$$C = d^2 - 2d + 447$$

where  $C$  is the cost, in cents, and  $d$  is the diameter of the pizza, in centimeters. If the pizza costs \$16.00, then what is a reasonable estimate for the diameter of the pizza?

- (A) 20 cm (B) 25 cm (C) 35 cm (D) 40 cm

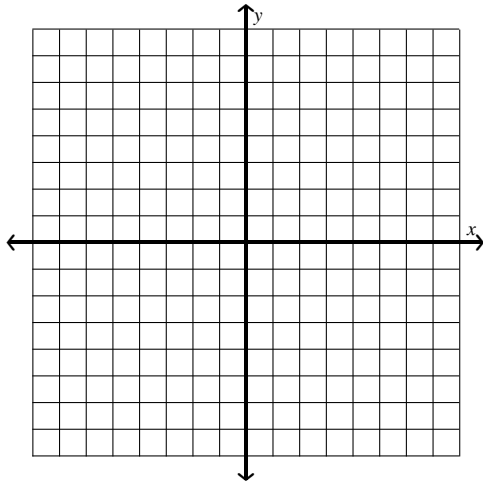
31. Solve the system:  $y = x^2$   
 $y = 2 - x$

- (A)  $(-2, 4), (1, 1)$  (B)  $(2, -4), (1, 1)$   
(C)  $(-2, -4), (1, 1)$  (D)  $(1, -1), (2, -4)$

32. Solve the system graphically.

$$g(x) = x^2 + 4x + 4$$

$$h(x) = x + 2$$



- (A)  $(1, 1), (-2, 0)$  (B)  $(-1, 1), (-2, 0)$   
(C)  $(0, 2), (-1, 1)$  (D)  $(1, 3), (2, 4)$

33. Solve the system:  $y = -x^2 + 1$   
 $y = 2x + 1$

- (A)  $(0, 1)$  (B)  $(0, 1), (-1, 0)$   
(C)  $(0, 1), (2, -3)$  (D)  $(0, 1), (-2, -3)$

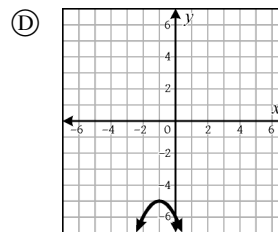
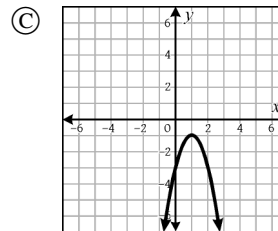
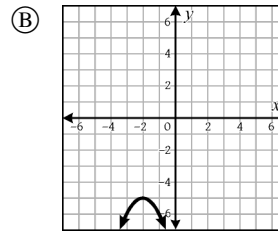
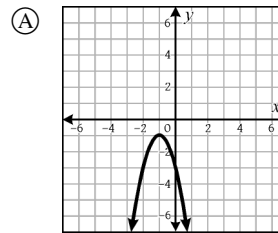
34. When Patricia and Carlos tried to solve the following system of equations, Patricia said there were two real solutions and Carlos said there were no real solutions. Who is correct and why?

$$y = 3x^2 + 4x + 3$$

$$y = 4x - 3$$

- (A) Carlos, the system has no real solution  
(B) Patricia, two real solutions at  $(-2, 0)$  and  $(4, 2)$   
(C) Patricia, two real solutions at  $(2, 0)$  and  $(3, 2)$   
(D) Neither, one real solution at  $(\frac{3}{4}, 0)$

35. Which of the following represents the graph of  $f(t) = -2t^2 + 4t - 3$ ?



36. Which of the following tables corresponds to the function  $y = x^2 - 2x + 3$ ?

Ⓐ

$x$	$y$
-1	6
1	2
2	6

Ⓑ

$x$	$y$
-1	4
1	2
2	3

Ⓒ

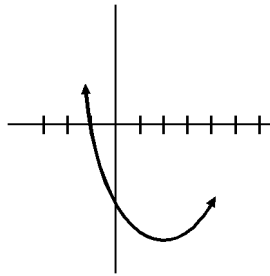
$x$	$y$
-1	6
1	2
2	3

Ⓓ

$x$	$y$
-1	4
1	3
2	2

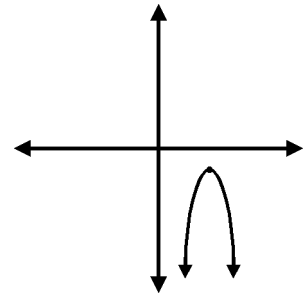
37. The graph of  $y = x^2 - 4x - 5$  is a parabola. (A portion of the graph is shown.) The  $x$ -intercepts of this parabola are  $-1$  and \_\_\_\_\_.

- Ⓐ 0      Ⓑ  $4\frac{1}{2}$   
 Ⓒ 5      Ⓓ  $5\frac{1}{2}$

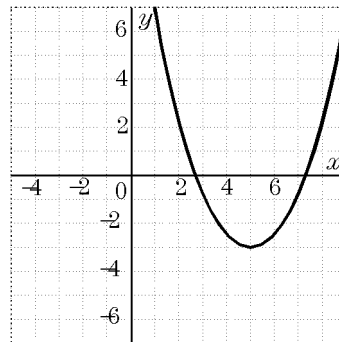


38. How many solutions are shown by the graph of the quadratic function?

- Ⓐ zero  
 Ⓑ one  
 Ⓒ two  
 Ⓓ three



39. In the diagram, is the vertex a maximum or minimum point? What are the coordinates of the vertex?



- Ⓐ minimum; (5, 3)      Ⓑ maximum; (5, 3)  
 Ⓒ minimum; (-3, 5)      Ⓓ minimum; (5, -3)

40. Solve using the Quadratic Formula.

- a)  $x^2 + x = 6$   
 b)  $4x^2 - 4x = 3$   
 c)  $3x^2 = 7x - 4$