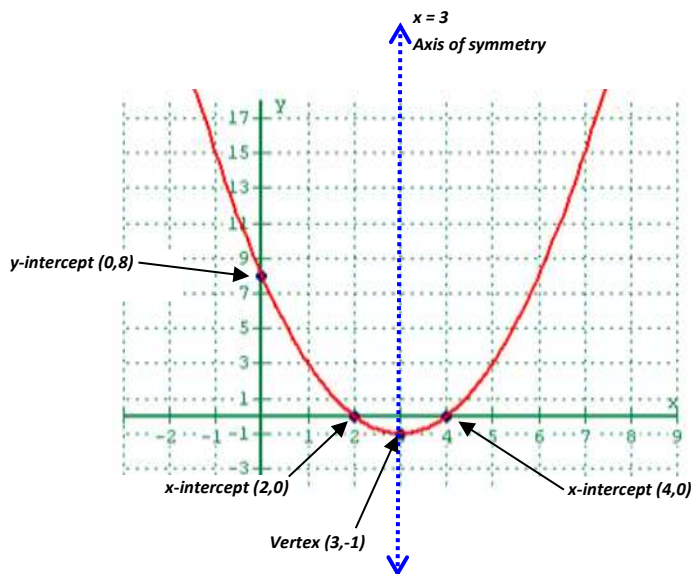


Answers to Practice Questions for MTE 9 – Functions, Quadratic Equations, and Parabolas

1. b,d
2. a, b, d
3. $\{x|x = -3, -1, 4, 7\}$
4. $\{y|y=2, 0, 5, -8\}$
5. D: $[-1, 3]$ R: $[-5, 4]$
6. $[1, \infty)$
7. $(-\infty, -2) \cup (-2, \infty)$
8. 4
9. $a^2 - 1$
10. $3x^2 + 6xh + 3h^2 - 2x - 2h + 4$
11. $x = \pm\sqrt{2}$
12. $x = \frac{2}{3}, -1$
13. $x = \frac{1 \pm \sqrt{5}}{2}$
14. $x = 2$
15. $x = -2 \pm i\sqrt{2}$
25. $(1, 3), (-1, 15)$
26. Graph
16. a. IV
b. III
c. II and III
d. I
17. $f(x) = (x + 3)^2 - 3; (-3, -3)$
18. $f(x) = 2(x + 1)^2 - 1; (-1, -1)$
19. $(-3, -1)$
20. Up, since $a > 0$
21. $(3, -1)$
22. $x = 3$
23. $(4, 0), (2, 0)$
24. $(0, 8)$



27. The width is =30 feet and the length is 60 feet
28. 25 bushels must be sold to yield the maximum revenue of \$625.
29. The flare will reach its highest point of 149 feet at $t = 3$ sec.
30. A function cannot have two y-intercepts since no x-coordinate can have more than one y-coordinate for a function.
31. The range for a quadratic function can never equal all real numbers. Every quadratic function has either a maximum value (if $a < 0$) or a minimum value (if $a > 0$) So the range can never be $(-\infty, \infty)$