Chapter 9 Test Review Name ANSWER KEY

Graph the Quadratic Function. You must use at least 3 points to graph.

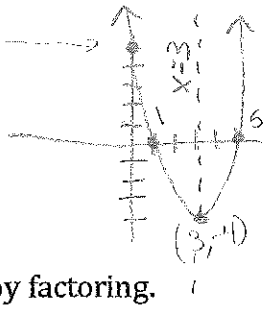
- Label the vertex, the x-intercepts, and y-intercept if they exist. ✓
- Draw the axis of symmetry and write its equation. ✓
- Show the calculations and work for finding the vertex. ✓

1. $y = x^2 - 6x + 5$

$x = \frac{6}{2} = 3$ $(x-5)(x-1)$ 5 1

$y = 3^2 - 6(3) + 5$

$y = -4$

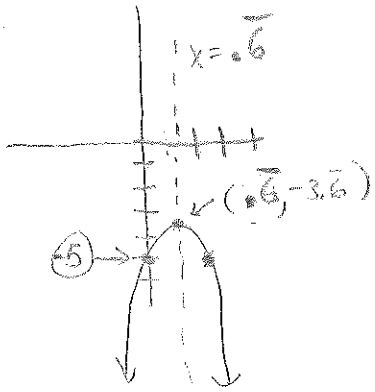


2. $y = -3x^2 + 4x - 5$

$x = \frac{-4}{-6} = .\overline{6}$

$y = -3(.\overline{6})^2 + 4(.\overline{6}) - 5$

$y = -3.\overline{6}$



Solve the equation by factoring.

3. $0 = x^2 + 9x + 18$

$0 = (x+6)(x+3)$

$-6 \quad -3$

4. $0 = 3x^2 - 10x + 8$

$24x \quad -6 - 4 = -10$

$3x^2 - 6x - 4x + 8$

$3x(x-2) - 4(x-2)$

$(3x-4)(x-2)$

$\frac{4}{3} \quad 2$

5. $0 = 10x^2 + 5x$

$0 = 5x(2x+1)$

$0 \quad \frac{-1}{2}$

Solve by completing the square.

6. $x^2 + 8x = 0$

$x^2 + 8x + 16 = 16$

$(x+4)^2 = 16$

$x + 4 = \pm 4$

$-4 \quad -4$

$x = 0$ or -8

7. $x^2 + 10x - 600 = 0$

$x^2 + 10x = 600$

$+25 \quad +25$

$(x+5)^2 = 625$

$x + 5 = \pm 25$

$-5 \quad -5$

$x = -30$ or 20

8. $x^2 + 7x + 13 = 0$

$x^2 + 7x = -13$

$x^2 + 7x + 12.25 = -13 + 12.25$

$(x + 3.5)^2 = -.75$

$\emptyset$ can't take $\sqrt{\ }$ of a −

Solve by using the square root.

9. $x^2 - 45 = 0$

$x^2 = 45$

$x = \pm 6.71$

10. $3x^2 - 6 = 0$

$3x^2 = 6$

$x^2 = 2$

$x = \pm 1.41$

11. $5x^2 + 125 = 0$

$5x^2 = -125$

$x^2 = -25$

$\emptyset$ can't take $\sqrt{\ }$ of a −

Solve by using the quadratic formula

12. $0 = 3x^2 + 7x + 11$

$\frac{-7 \pm \sqrt{7^2 - 4(3)(11)}}{2(3)}$

$\frac{-7 \pm \sqrt{49 - 132}}{6}$

$\frac{-7 \pm \sqrt{-83}}{6}$ ← $\emptyset$ can't take $\sqrt{\ }$ of a −

13. $5x^2 - 4x - 3 = 0$

$\frac{4 \pm \sqrt{(-4)^2 - 4(5)(-3)}}{2(5)}$

$\frac{4 \pm \sqrt{16 + 60}}{10}$

$\frac{4 \pm \sqrt{76}}{10}$

$\frac{4 \pm 8.72}{10}$

$\frac{12.72}{10} \quad \frac{-4.72}{10}$

1.27 or −.47

Use substitution or elimination to solve the system.

14. $y = x^2 + 12x + 2$
$y = 7x - 4$

$7x - 4 = x^2 + 12x + 2$
$-7x \quad -7x$
$-4 = x^2 + 5x + 2$
$+4 \quad +4$
$0 = x^2 + 5x + 6$
$(x+2)(x+3)$
$-2 \quad -3$
$(-2, -10) \quad (-3, -25)$

OR
$y = x^2 + 12x + 2$
$-y = 7x - 4$
$0 = x^2 + 5x + 6$
$0 = (x+2)(x+3)$
$-2 \quad -3$

Graph to solve the system

15. $y = x^2 + 4x + 8$
$y = \frac{2}{5}x - 3$

$\emptyset$ They do not intersect

Choose the best technique for solving and justify your answer for choosing that technique.

16. $0 = x^2 + 8$ Square root. There is no b term

17. $0 = x^2 + 12x + 27$
Factoring. It is easily factored. $(x+9)(x+3)$

18. $0 = 5x^2 + 13x - 4$
Quad Formula. It is not factorable. Completing square would be hard b/c there would be a fraction for b.

19. $0 = x^2 + 8x - 2$
Completing the square b is even and a = 1

Describe the pattern in the data. Does it represent, linear, exponential, or quadratic data?

20.

x	y
3	11
4	18
5	27
6	38

+7, +9, +11; +2, +2

Quadratic

21.

x	y
0	3
1	6
2	12
3	24

×2, ×2, ×2

Exponential

23.

x	y
5	14
6	16
7	18
8	20

+2, +2, +2

Linear

24. A rocket is launched from a launching pad that is 60 feet high at a speed of 80 ft/sec. What is the rocket's maximum height and how long until it hits the ground?

$h = -16t^2 + vt + c$

$h = -16t^2 + 80t + 60$

2nd Calc maximum (2.5, 160)
2nd Calc zero (5.66, 0)

max height = 160 feet
time until impact
5.66 seconds

or $x = \frac{-b}{2a}$ for vertex

and
$0 = -16t^2 + 80t + 60$
for the x-int

25. The length of a rectangle is 3 more than twice the ~~length~~ width. If the area is 324 what are the length and width of the ~~triangle~~ rectangle. Write and equation and use any technique to solve.

$x(2x+3) = 324$
$2x^2 + 3x - 324 = 0$

$\frac{-3 \pm \sqrt{3^2 - 4(2)(-324)}}{2(2)}$

$\frac{-3 \pm \sqrt{2601}}{4}$

$\frac{-3 \pm 51}{4}$

-13.5 or 12

Only + makes sense

width = 12
length = 27