

Math 2 Unit 10 Worksheet 6
Alternate Forms of Quadratic Functions

Name: _____
Date: _____ Per: _____

[1-2] Identify equivalent functions.

1. Which of the following are equivalent to $y = x^2 - 16$?

a) $y = (x - 0)^2 - 16$

d) $y = 1x^2 + 0x + 16$

b) $y = (x - 4)^2$

e) $y = (x + 4)(x - 4)$

c) $y = (x + 0)^2 - 16$

f) $y = 4(x^2 - 4)$

2. Which of the following are equivalent to $y = (x - 3)^2 - 4$?

a) $y = x^2 - 9$

d) $y = (x - 5)(x - 1)$

b) $y = x^2 - 6x + 5$

e) $y = (x - 2)(x - 3)$

c) $y = x^2 - 6x - 14$

f) $y = (x - 3)(x - 3) - 4$

[3-6] Rewrite the quadratic equation written in vertex form as an equivalent equation written in standard form.

Vertex Form $y = a(x - h)^2 + k$

Standard Form $y = ax^2 + bx + c$

3. $y = (x - 6)^2 - 12$

4. $y = 3(x + 2)^2 + 1$

5. $y = \frac{1}{2}(x + 4)^2 + 2$

6. $y = -2(x - 3)^2 + 4$

7. Pablo and Amanda were finding the x -intercepts for the quadratic function $y = (x - 1)^2 - 9$. They agreed to put zero in for y and solve for x . Pablo says they need to solve by square rooting. Amanda says they can solve by factoring.

Pablo's Work: $0 = (x - 1)^2 - 9$ $9 = (x - 1)^2$ $\pm 3 = x - 1$ $x = 3 + 1 = 4$ $x = -3 + 1 = -2$
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Amanda's Work: $0 = (x - 1)^2 - 9$ $0 = (x - 1)(x - 1) - 9$ $0 = x^2 - 2x + 1 - 9$ $0 = x^2 - 2x - 8$ $0 = (x - 4)(x + 2)$ $x - 4 = 0$ or $x + 2 = 0$ $x = 4$ $x = -2$

a) What are the x -intercepts Pablo found?

(____, ____) and (____, ____)

b) What are the x -intercepts Amanda found?

(____, ____) and (____, ____)

[8-13] Use the zero-product property to solve the equations.

8. $(y + 6)(y - 4) = 0$

9. $(3f + 2)(f - 5) = 0$

10. $(2x - 7)(4x + 10) = 0$

11. $(8t - 7)(3t + 5) = 0$

12. $d(d - 8) = 0$

13. $3m(2m + 9) = 0$

[14-25] Solve by factoring.

14. $n^2 + 2n - 15 = 0$

15. $a^2 - 15a + 56 = 0$

16. $z^2 - 10z + 24 = 0$

17. $8x^2 + 10x + 3 = 0$

18. $3b^2 + 7b - 6 = 0$

19. $5p^2 - 9p - 2 = 0$

20. $w^2 + w = 12$

21. $s^2 + 12s = -32$

22. $d^2 = 5d$

23. $3j^2 = 21j$

24. $y^2 = -8y$

25. $r^2 = 2r + 35$