

# More Solving Quadratics Practice

Name \_\_\_\_\_  
Date \_\_\_\_\_

Block \_\_\_\_\_

Find the zeros of each function by graphing using a graphing calculator. If the zeros are imaginary, use any appropriate method to locate them.

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

$x = \{2, 3\}$

2.  $y = 2x^2 + 9x - 18$

$x = \{-6, 1.5\}$

2 imag. roots

3.  $f(x) = 1.3x^2 - 3.8x + 5.1$

$\frac{3.8 \pm \sqrt{14.44 - 4(6.63)}}{2.6}$

$\frac{3.8 \pm \sqrt{-12.08}}{2.6} = \frac{3.8 \pm 2i\sqrt{3.02}}{2.6}$

$\frac{1.9 \pm i\sqrt{3.02}}{1.3}$

Write a quadratic function in standard form for the information given.

4. roots:  $x = \{-5, 3\}$

$y = (x+5)(x-3)$   
 $y = x^2 + 2x - 15$

Not enough info to find a.

5. root:  $x = \{-6\}$

$y = (x+6)^2$   
 $y = x^2 + 12x + 36$

6. roots:  $x = \{\frac{2}{3}, -6\}$

$y = (3x-2)(x+6)$   
 $y = 3x^2 + 16x - 12$

7. vertex:  $(-6, -7)$   
point:  $(0, -61)$

$y = a(x+6)^2 - 7$   
 $-61 = a(6)^2 - 7$   
 $-54 = 36a$   
 $-1.5 = a$   
 $y = -1.5(x+6)^2 - 7$   
 $y = -1.5(x^2 + 12x + 36) - 7$

$y = -1.5x^2 - 18x - 54 - 7$   
 $y = -1.5x^2 - 18x - 61$

8. x-intercepts:  $-2, 2$   
point  $(-4, 8)$

$y = a(x+2)(x-2)$   
 $8 = a(-2)(-6)$   
 $8 = 12a$   
 $\frac{2}{3} = a$   
 $y = \frac{2}{3}(x^2 - 4)$

$y = \frac{2}{3}x^2 - \frac{8}{3}$

9. points:  $(-1, 5), (0, 3), (3, 9)$

calc.  
 $y = x^2 - x + 3$

Solve each quadratic equation using any appropriate method. (. . . preferably the easiest!! ☺)

10.  $x^2 + 18 = 9x$   
 $x^2 - 9x + 18 = 0$   
 $(x-6)(x-3) = 0$   
 $x = \{3, 6\}$

11.  $x^2 - 14x + 19 = 0$   
 $x^2 - 14x + 49 = -19 + 49$   
 $\sqrt{(x-7)^2} = \sqrt{30}$   
 $x-7 = \pm\sqrt{30}$   
 $x = 7 \pm \sqrt{30}$

12.  $7x^2 + 6x + 2 = 0$   
 $x = \frac{-6 \pm \sqrt{36 - 4(14)}}{14}$   
 $\frac{-6 \pm \sqrt{-20}}{14}$   
 $\frac{-6 \pm 2i\sqrt{5}}{14} = \frac{-3 \pm i\sqrt{5}}{7}$

13.  $x^2 - \frac{1}{2}x + \frac{1}{16} = 0$   
 $\sqrt{(x-\frac{1}{4})^2} = 0$   
 $x - \frac{1}{4} = 0$   
 $x = \{\frac{1}{4}\}$

14.  $12x^2 + 2x - 4 = 0$   
 $2(6x^2 + x - 2) = 0$   
 $2(x+\frac{2}{3})(x-1) = 0$   
 $2(3x+2)(x-1) = 0$   
 $x = \{-\frac{2}{3}, 1\}$

15.  $5x^2 - 2x + 4 = 0$   
 $x = \frac{2 \pm \sqrt{4 - 4(20)}}{10}$   
 $\frac{2 \pm \sqrt{-76}}{10}$   
 $\frac{2 \pm 2i\sqrt{19}}{10} = \frac{1 \pm i\sqrt{19}}{5}$

$$16. x^2 = 3x$$

$$x^2 - 3x = 0$$

$$x(x-3) = 0$$

$$x = \{0, 3\}$$

$$17. -\frac{1}{2}(x-3)^2 + 2 = 0$$

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

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

$$x-3 = \pm 2$$

$$x = 3+2 = 5$$

$$x = 3-2 = 1$$

$$x = \{1, 5\}$$

$$18. 4(x+3)^2 = -16$$

$$(x+3)^2 = -4$$

$$x+3 = \pm 2i$$

$$x = -3 \pm 2i$$

$$19. x^2 + 6x + 8 = 0$$

$$(x+4)(x+2) = 0$$

$$x = \{-4, -2\}$$

$$20. 2x^2 - 10x = -5$$

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

$$\frac{10 \pm \sqrt{100 - 4(10)}}{4}$$

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

$$\frac{10 \pm 2\sqrt{15}}{4} = \frac{5 \pm \sqrt{15}}{2}$$

$$21. -2x^2 - 8x + 3 = 0$$

$$\frac{8 \pm \sqrt{64 - 4(-6)}}{-4}$$

$$\frac{8 \pm \sqrt{88}}{-4}$$

$$\frac{8 \pm 2\sqrt{22}}{-4} = \frac{-2 \pm \sqrt{22}}{2}$$

$$22. x^2 = -x + 5$$

$$x^2 + x + \frac{1}{4} = 5 + \frac{1}{4}$$

$$\sqrt{\left(x + \frac{1}{2}\right)^2} = \sqrt{\frac{21}{4}}$$

$$x + \frac{1}{2} = \pm \frac{\sqrt{21}}{2}$$

$$x = -\frac{1}{2} \pm \frac{\sqrt{21}}{2}$$

$$\text{or } \frac{-1 \pm \sqrt{21}}{2}$$

$$23. 9x^2 - 24x + 16 = 0$$

$$\sqrt{(3x-4)^2} = 0$$

$$3x-4 = 0$$

$$3x = 4$$

$$x = \left\{\frac{4}{3}\right\}$$

$$24. 2x^2 - 32 = 0$$

$$2x^2 = 32$$

$$x^2 = 16$$

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

$$25. -5x^2 = 7x$$

$$-5x^2 - 7x = 0$$

$$-x(5x+7) = 0$$

$$x = 0, -\frac{7}{5}$$

$$\left\{-\frac{7}{5}, 0\right\}$$

$$26. 3x^2 - 5x + 2 = 0$$

$$(3x-2)(x-1) = 0$$

$$x = \left\{\frac{2}{3}, 1\right\}$$

$$27. 6x^2 - 2x - 1 = 0$$

$$\frac{2 \pm \sqrt{4 - 4(-6)}}{12}$$

$$\frac{2 \pm \sqrt{28}}{12}$$

$$\frac{2 \pm 2\sqrt{7}}{12} = \frac{1 \pm \sqrt{7}}{6}$$