Honors Algebra
Chapter 10 Review – Solving Quadratics

Name:
Period: Key

Solve using any method. Note: you must use each method at least twice.

1. FACTORING $x^2+4x-5=0$

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

$x+5=0 \quad x-1=0$

$x=-5 \quad x=1$

2. SQUARE ROOT $\frac{5x^2}{5}=\frac{45}{5}$

$\sqrt{x^2}=\sqrt{9}$

$x=\pm 3$

3. QUAD FORMULA $3x^2-5x-2=0$

$a=3 \quad b=-5 \quad c=-2$

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

$x=\frac{5\pm\sqrt{25+24}}{6}$

$x=\frac{5\pm\sqrt{49}}{6} \Rightarrow x=\frac{5\pm 7}{6}$

$x=2, -\frac{1}{3}$

4. SQUARE ROOT $x^2-3=4$

$+3 \quad +3$

$\sqrt{x^2}=\sqrt{7}$

$x=\pm\sqrt{7}$

$x\approx\pm 2.65$

5. FACTORING $x^2-10x+24=0$

$(x-6)(x-4)=0$

$x-6=0 \quad x-4=0$

$x=6 \quad x=4$

6. FACTORING $x^2-2x-15=0$

$(x-5)(x+3)=0$

$x-5=0 \quad x+3=0$

$x=5 \quad x=-3$

7. COMPLETING THE SQUARE $x^2+8x=-4$

$x^2+8x+16=-4+16 \quad \frac{8}{2}=4^2=16$

$\sqrt{(x+4)^2}=\sqrt{12}$

$x+4=\pm\sqrt{12}$

$-4 \quad -4$

$x=-4\pm\sqrt{12}$

$x\approx -7.46, -0.54$

8. GRAPHING $x^2+6x+9=0$

$x=-3$

(x-intercept & vertex)

9. GRAPHING $2x^2-7x=-3$

$+3 \quad +3$

$2x^2-7x+3=0$

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

10. QUAD FORMULA $x^2-8x+12=0$

$a=1 \quad b=-8 \quad c=12$

$x=\frac{+8\pm\sqrt{(-8)^2-4(1)(12)}}{2(1)}$

$x=\frac{8\pm\sqrt{64-48}}{2}$

$x=\frac{8\pm\sqrt{16}}{2}$

11. COMPLETING THE SQUARE $x^2-2x=10$

$x^2-2x+1=10+1 \quad \frac{-2}{2}=(-1)^2=1$

$\sqrt{(x-1)^2}=\sqrt{11}$

$x-1=\pm\sqrt{11}$

$+1 \quad +1$

$x=1\pm\sqrt{11}$

$x\approx -2.32, 4.32$

12. GRAPHING $x^2+6x+2=0$

$x\approx -5.65, -.35$

$x = \frac{8 \pm \sqrt{16}}{2}$

$x = \frac{8 \pm 4}{2} = \boxed{2, 6}$

$x \approx -2.32, 1.32$

Graph the following functions with at least three accurate points. Be sure to label the vertex and axis of symmetry.

1. $y = x^2 + 4x + 4$

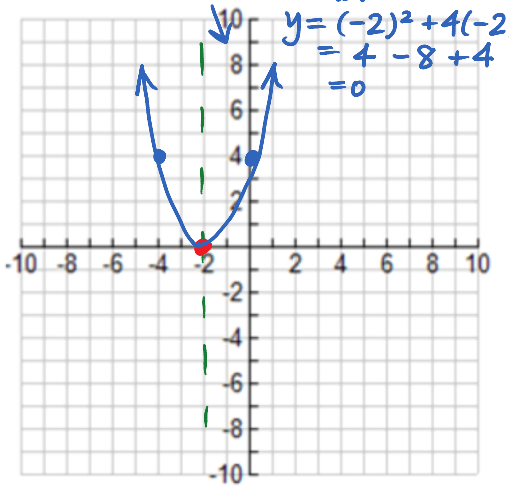
$x = \frac{-4}{2(1)} = \frac{-4}{2} = -2$

$y = (-2)^2 + 4(-2) + 4$

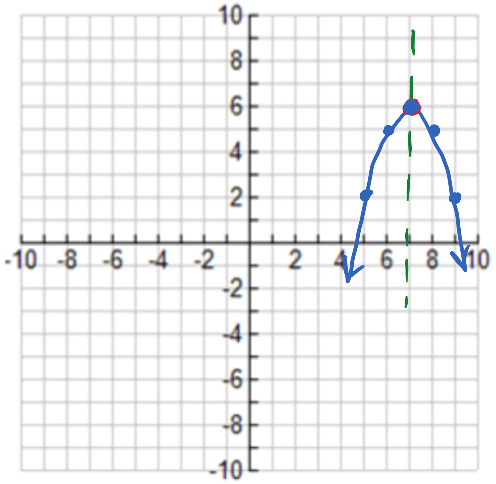
$= 4 - 8 + 4$

$= 0$

Vertex: $(-2, 0)$



2. $y = -(x-7)^2 + 6$ Vertex: $(7, 6)$



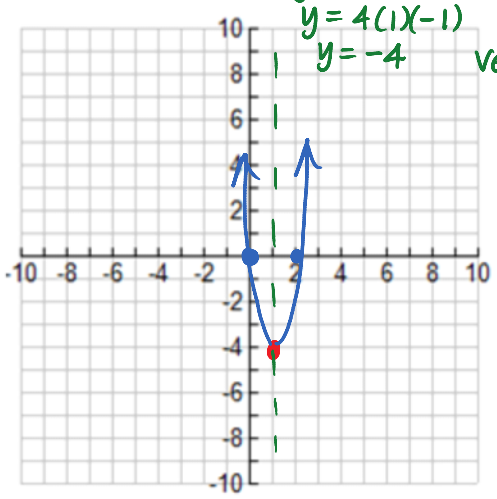
3. $y = 4x(x-2)$

$y = 4(1)(1-2)$

$y = 4(1)(-1)$

$y = -4$

Vertex $(1, -4)$

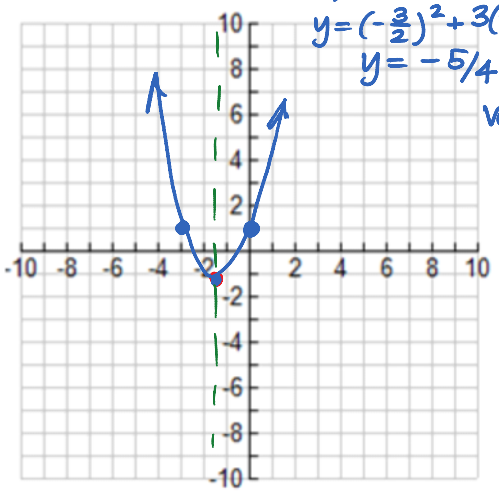


4. $y = x^2 + 3x + 1$ $x = \frac{-3}{2(1)} = -\frac{3}{2}$

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

$y = -5/4$

Vertex $(-\frac{3}{2}, -\frac{5}{4})$



Tell whether the vertex of the graph of the function lies above, below or on the x-axis. Explain your reasoning.

5. $y = -15x^2 + 10x - 25$

$b^2 - 4ac$

$10^2 - 4(-15)(-25)$

$100 - 1500$

BELOW!

6. $y = -3x^2 - 4x + 8$

$b^2 - 4ac$

$(-4)^2 - 4(-3)(8)$

112

(two solutions)

ABOVE!

7. $y = 9x^2 - 24x + 16$

$b^2 - 4ac$

$(-24)^2 - 4(9)(16)$

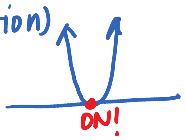
0

(one solution)

$10^2 - 4(-15)(-25)$
$100 - 1500$
-1400 (no solutions)

$(-4)^2 - 4(-3)(8)$
112
(two solutions)

0
(one solution)



Write a function of the form $y = ax^2 + bx + c$ whose graph has one x-intercept.

ANY PERFECT SQUARE TRINOMIAL

EX: $y = x^2 + 2x + 1$
$y = x^2 + 6x + 9$
$y = x^2 - 4x + 4$