

Advanced Algebra
Graphing Quadratic Functions – VERTEX FORM

Name Kay hr

Graph each quadratic function. Write coordinates for all 5 steps.

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

Opens: UP

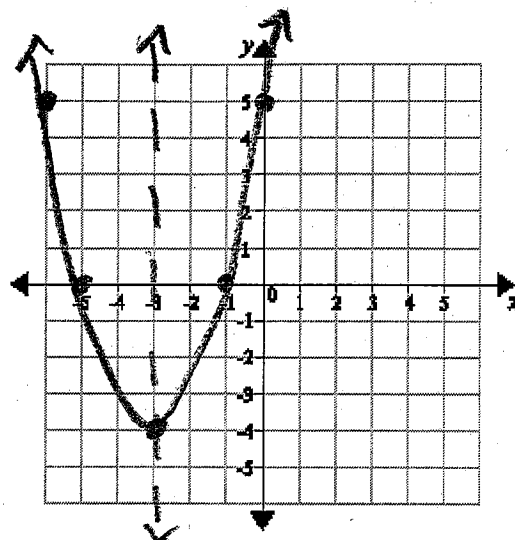
AOS: $x = -3$

Vertex: $(-3, -4)$

x-intercepts: $(-5, 0)$ $(-1, 0)$

y-intercept: $(0, 5)$

pt of reflection: $(-6, 5)$



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

Opens: UP

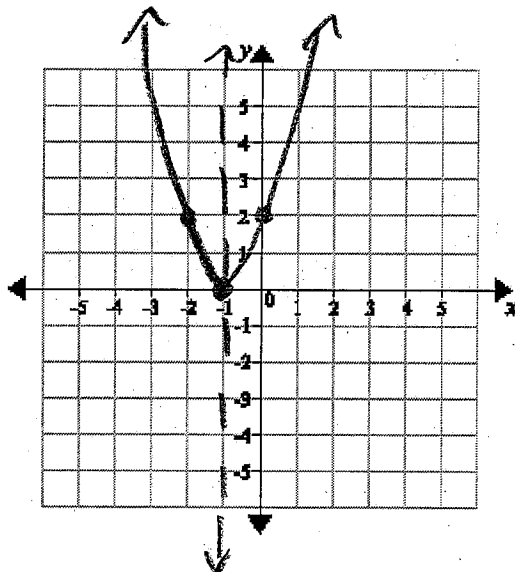
AOS: $x = -1$

Vertex: $(-1, 0)$

x-intercepts: $(-1, 0)$

y-intercept: $(0, 2)$

pt of reflection: $(-2, 2)$



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

Opens: down

AOS: $x = 2$

Vertex: $(2, 1)$

x-intercepts: $(3, 0)$ $(1, 0)$

y-intercept: $(0, -1)$

pt of reflection: $(4, -1)$

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

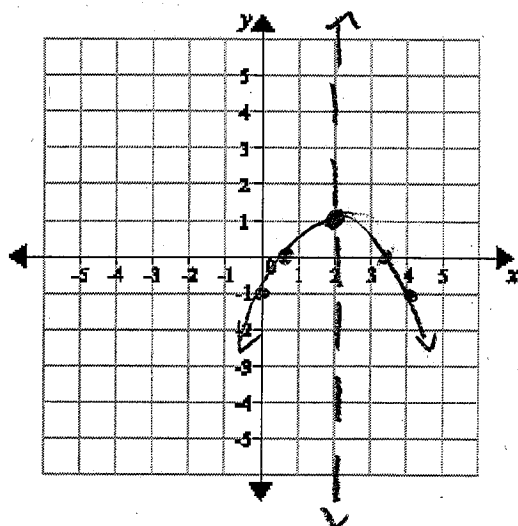
$$-1 = -\frac{1}{2}(x - 2)^2$$

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

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

$$\pm 1.4 = x - 2$$

$$2 \pm 1.4 = x$$



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

Opens: down

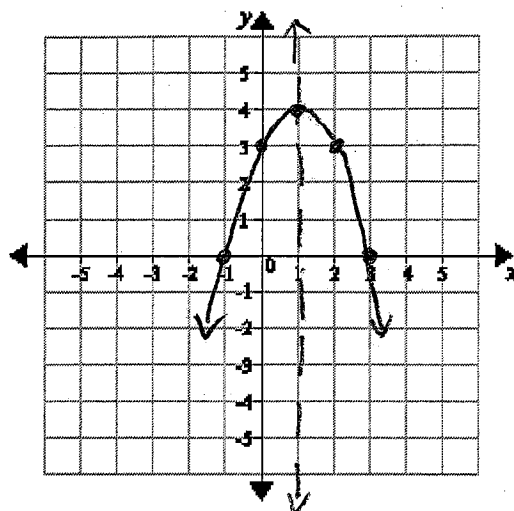
AOS: $x=1$

Vertex: $(1, 4)$

x-intercepts: $(3, 0)(-1, 0)$

y-intercept: $(0, 3)$

pt of reflection: $(2, 3)$



5. $y = -(x-7)^2 + 10$

Opens: down

AOS: $x=7$

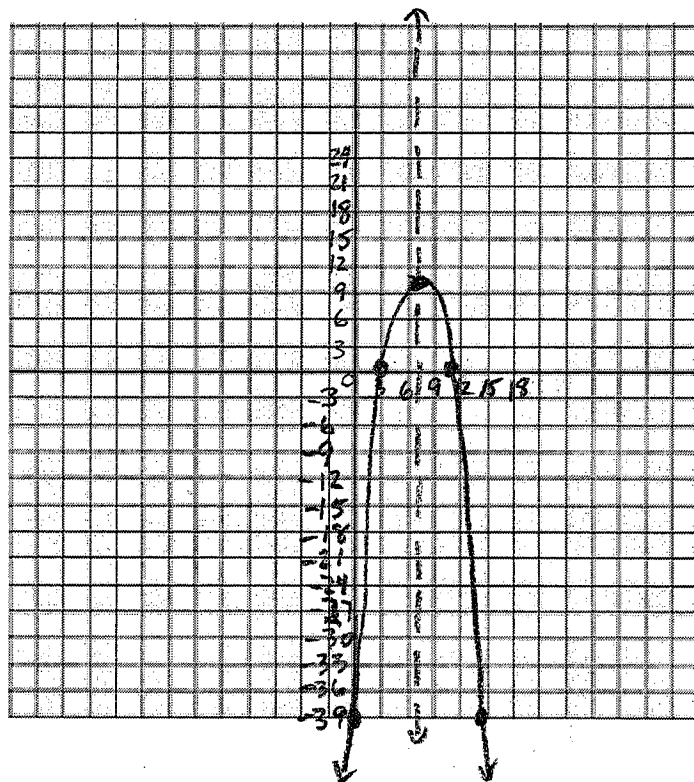
Vertex: $(7, 10)$

x-intercepts: $(10.2, 0)(3.8, 0)$

y-intercept: $(0, -39)$

pt of reflection: $(14, -39)$

$$\begin{aligned} 0 &= -(x-7)^2 + 10 \\ -10 &= -(x-7)^2 \\ 10 &= (x-7)^2 \\ \sqrt{10} &= \sqrt{(x-7)^2} \\ \pm 3.2 &= x-7 \\ 7 \pm 3.2 &= x \end{aligned}$$



6. $y = (x-1)^2 + 2$

Opens: UP

AOS: $x=1$

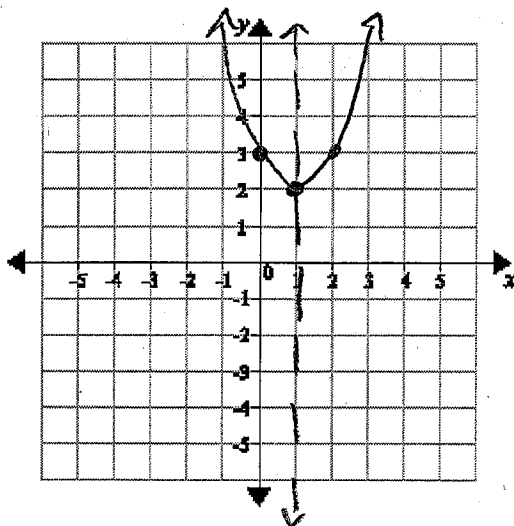
Vertex: $(1, 2)$

x-intercepts: none

y-intercept: $(0, 3)$

pt of reflection: $(2, 3)$

$$\begin{aligned} 0 &= (x-1)^2 + 2 \\ -2 &= (x-1)^2 \\ \sqrt{-2} &= \sqrt{(x-1)^2} \\ \pm i\sqrt{2} &= x-1 \\ 1 \pm i\sqrt{2} &= x \end{aligned}$$



Advanced Algebra
Graphing Quadratic Functions - ~~VARIABLE~~ STANDARD FORM

Name My hr

Graph each quadratic function. Write coordinates for all 5 steps.

1. $y = x^2 + 6x + 8$

Opens: UP

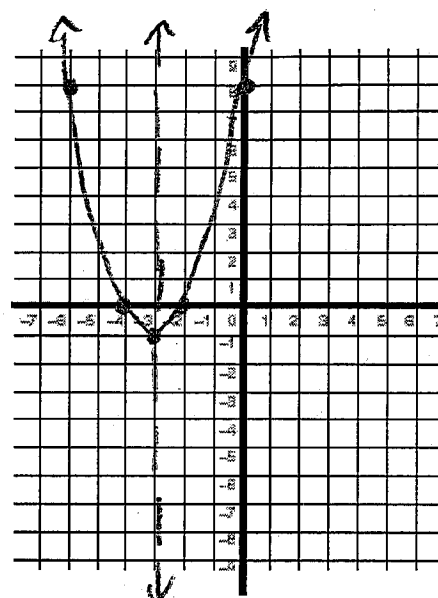
AOS: $x = -3$

Vertex: $(-3, -1)$

x-intercepts: $(-4, 0)$ $(-2, 0)$

y-intercept: $(0, 8)$

pt of reflection: $(-6, 8)$



2. $y = x^2 + 9x + 20$

Opens: UP

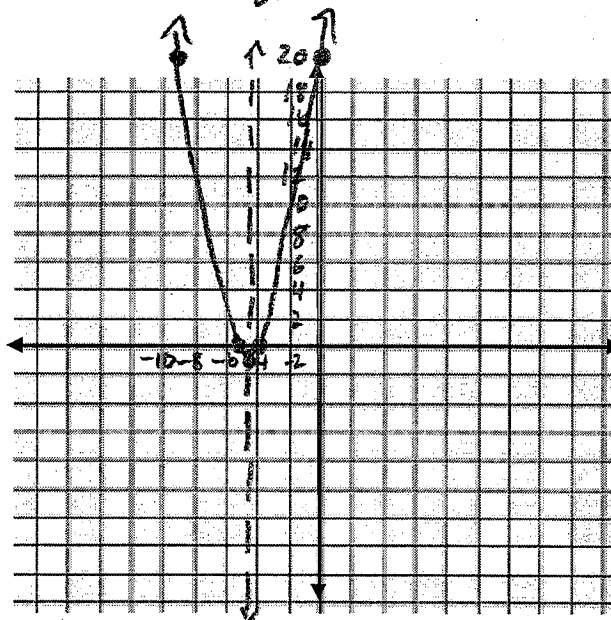
AOS: $x = -4.5$

Vertex: $(-4.5, -0.25)$

x-intercepts: $(-4, 0)$ $(-5, 0)$

y-intercept: $(0, 20)$

pt of reflection: $(-9, 20)$



3. $y = x^2 + 7x + 6$

Opens: UP

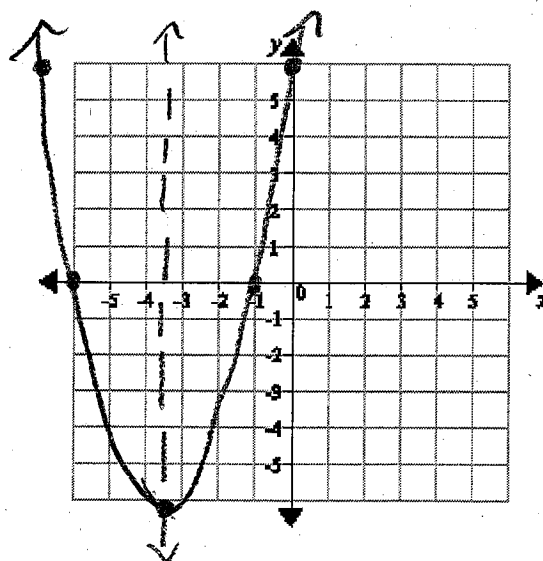
AOS: $x = -3.5$

Vertex: $(-3.5, -6.25)$

x-intercepts: $(-6, 0)$ $(-1, 0)$

y-intercept: $(0, 6)$

pt of reflection: $(-7, 6)$



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

Opens: down

AOS: $x=1$

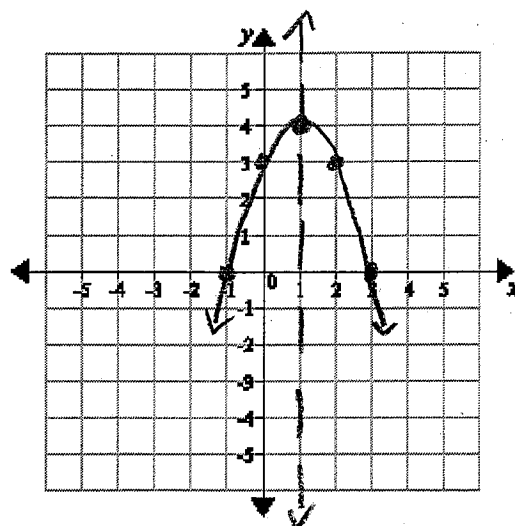
Vertex: $(1, 4)$

x-intercepts: $(-1, 0)(3, 0)$

y-intercept: $(0, 3)$

pt of reflection: $(2, 3)$

$$\begin{aligned} -1(0 &= -x^2 + 2x + 3) -1 \\ 0 &= x^2 - 2x - 3 \\ 0 &= (x-3)(x+1) \\ 0 &= x-3 \quad 0 = x+1 \\ 3 &= x \quad -1 = x \end{aligned}$$



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

Opens: up

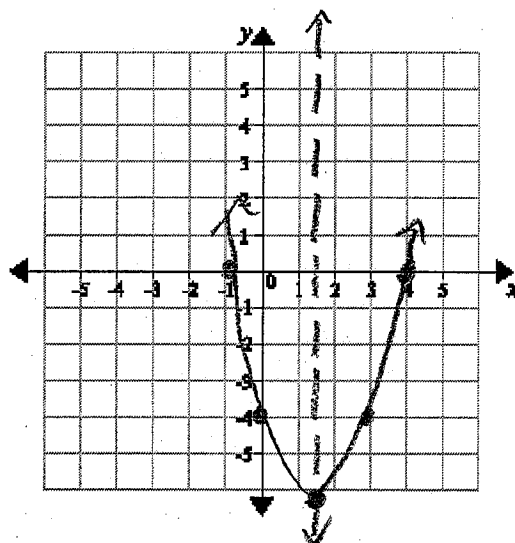
AOS: $x=1.5$

Vertex: $(1.5, -6.25)$

x-intercepts: $(4, 0)(-1, 0)$

y-intercept: $(0, -4)$

pt of reflection: $(3, -4)$



6. $y = \frac{1}{2}x^2 - x - 4$

Opens: up

AOS: $x=1$

Vertex: $(1, -4.5)$

x-intercepts: $(-2, 0)(4, 0)$

y-intercept: $(0, -4)$

pt of reflection: $(2, -4)$

$$\begin{aligned} 2(0 &= \frac{1}{2}x^2 - x - 4) 2 \\ 0 &= x^2 - 2x - 8 \\ 0 &= (x-4)(x+2) \\ 0 &= x-4 \quad 0 = x+2 \\ 4 &= x \quad -2 = x \end{aligned}$$

