

Name: KEY!
Date: _____ Period _____

Graphing Parabolas WS

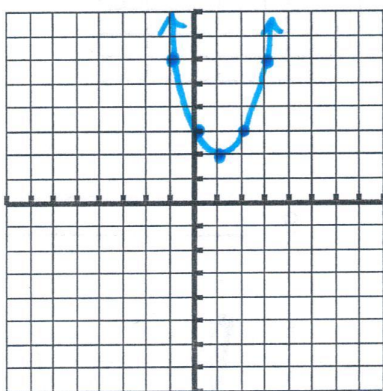
Graph each function.

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

Vertex = (1, 2)

A.O.S. = x=1 $\Rightarrow 1 \uparrow 1$
 $\Rightarrow 2 \uparrow 4$

Is the vertex a max or min?

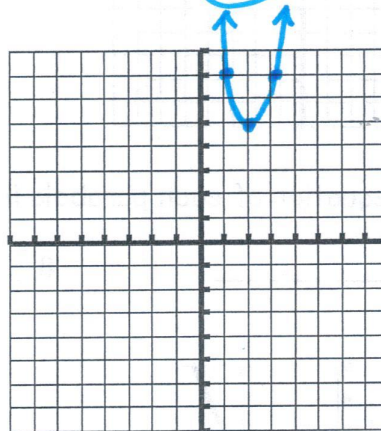


2. $y = 2(x-2)^2 + 5$

Vertex = (2, 5)

A.O.S. = x=2 $\Rightarrow 1 \uparrow 1 \cdot 2 = \uparrow 2$
 $\Rightarrow 2 \uparrow 4 \cdot 2 = \uparrow 8$

Is the vertex a max or min?

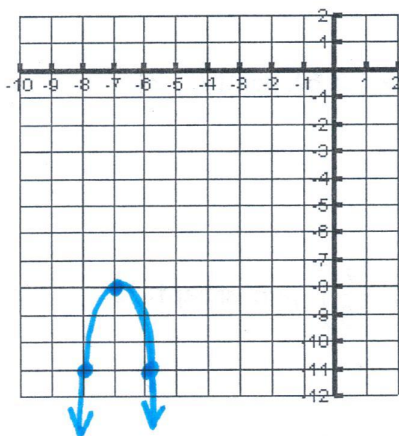


3. $y = \overset{\text{Flip}}{-3}(x+7)^2 - 8$

Vertex = (-7, -8)

A.O.S. = x=-7 $\Rightarrow 1 \downarrow 1 \cdot 3 = \downarrow 3$
 $\Rightarrow 2 \downarrow 4 \cdot 3 = \downarrow 12$

Is the vertex a max or min?

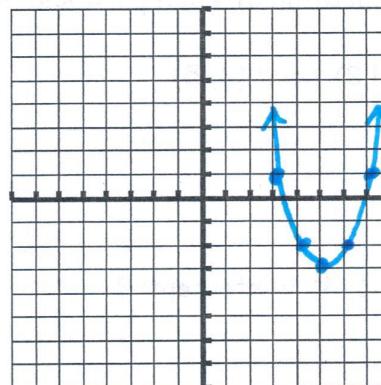


4. $y = (x-5)^2 - 3$

Vertex = (5, -3)

A.O.S. = x=5 $\Rightarrow 1 \uparrow 1$
 $\Rightarrow 2 \uparrow 4$

Is the vertex a max or min?

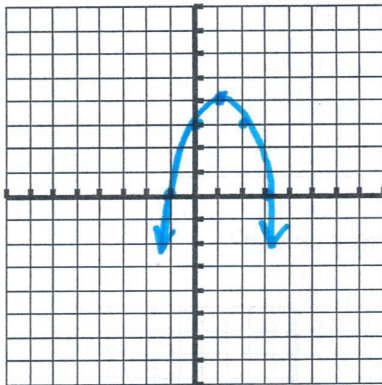


5. $y = -(x-1)^2 + 4$ (flip)

Vertex = $(1, 4)$

A.O.S. = $X=1$

Is the vertex a max or min?



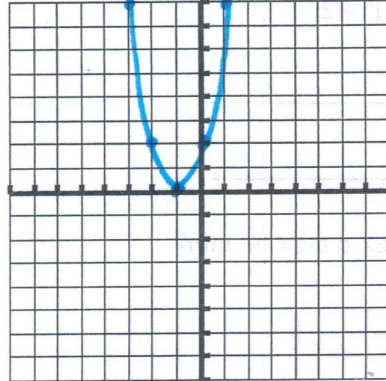
$\Rightarrow 1 \uparrow 1 = \downarrow 1$
 $\Rightarrow 2 \uparrow 4 = \downarrow 4$

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

Vertex = $(-1, 0)$

A.O.S. = $X=-1$

Is the vertex a max or min?

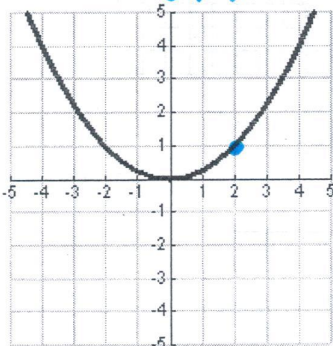


$\Rightarrow 1 \uparrow 1 \cdot 2 = \uparrow 2$
 $\Rightarrow 2 \uparrow 4 \cdot 2 = \uparrow 8$

Write the equation of each parabola in vertex form.

7. $y = \frac{1}{4}(x-0)^2 + 0$

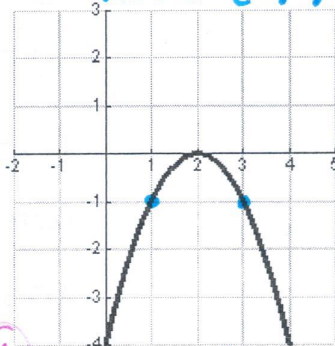
vertex: $(0, 0)$



$\rightarrow 2 \uparrow 1$ usually $\rightarrow 2 \uparrow 4 \cdot \frac{1}{4}$
 $\therefore a = \frac{1}{4}$

8. $y = -(x-2)^2 + 0$

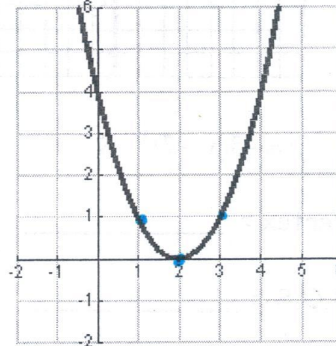
vertex: $(2, 0)$



$\rightarrow 1 \downarrow 1 \therefore a = -1$

9. $y = 1(x-2)^2 + 0$

vertex: $(2, 0)$



$\rightarrow 1 \uparrow 1 \therefore a = 1$

Write the equation of each parabola in vertex form.

10. vertex $(1, 2)$, point $(2, -5)$

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

$-5 = a(2-1)^2 + 2$

$-5 = a + 2$

$a =$

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

12. vertex $(-1, -4)$, y-intercept: $3 : (0, 3)$

$3 = a(0+1)^2 - 4$

$3 = a - 4$

$a = 7$

$y = 7(x+1)^2 - 4$

11. Vertex $(-3, 6)$, point $(1, -2)$

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

$-2 = a(1+3)^2 + 6$

$-2 = 16a + 6$

$-8 = 16a$

$-1 = 2a$

$a = -\frac{1}{2}$

$\frac{-4}{16} = \frac{16a}{16} \quad a = -\frac{1}{4}$

$y = -\frac{1}{4}(x+3)^2 + 6$

13. Vertex $(\frac{1}{10}, -\frac{9}{10})$, y-intercept: $-1 : (0, -1)$

$-1 = a(0 - \frac{1}{10})^2 - \frac{9}{10}$

$-1 = \frac{1}{100}a - \frac{9}{10}$

$-\frac{1}{10} = \frac{1}{100}a$

$100 \cdot -\frac{1}{10} = \frac{1}{100}a \cdot 100$

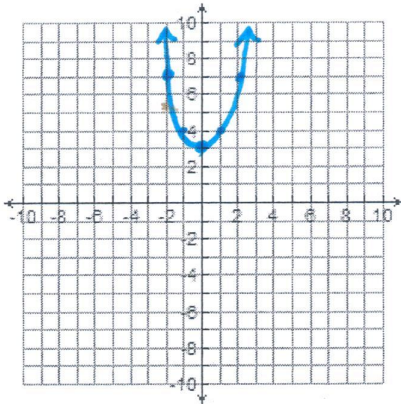
$-10 = a$

$y = -10(x - \frac{1}{10})^2 - \frac{9}{10}$

Graph the quadratic equation on the provided grid.

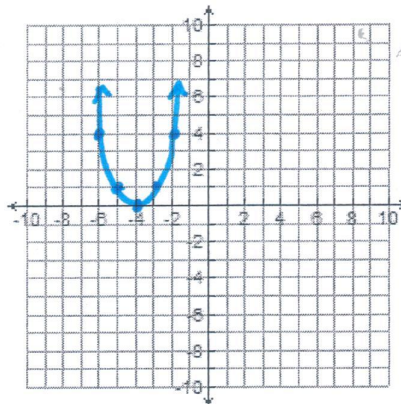
14. $f(x) = (x-0)^2 + 3$

vertex: $(0, 3)$



15. $f(x) = (x+4)^2 + 0$

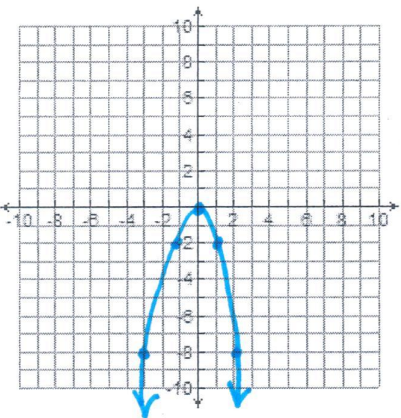
vertex: $(-4, 0)$



$\Rightarrow 1 \uparrow 1$
 $\Rightarrow 2 \uparrow 4$

16. $f(x) = -2(x-0)^2 + 0$

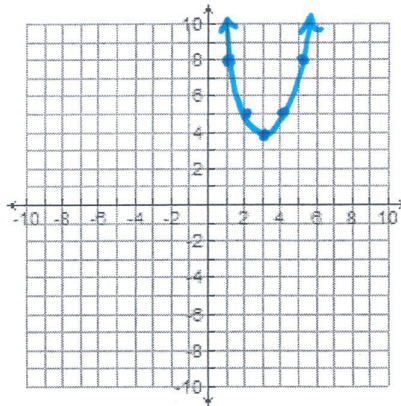
vertex: $(0, 0)$



$\Rightarrow 1 \uparrow 1 \cdot 2 = \downarrow 2$
 $\Rightarrow 2 \uparrow 4 \cdot 2 = \downarrow 8$

17. $f(x) = (x-3)^2 + 4$

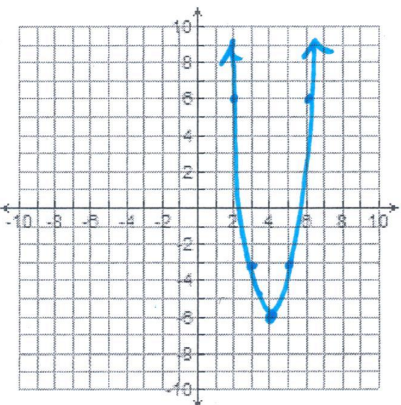
vertex: $(3, 4)$



$\Rightarrow 1 \uparrow 1$
 $\Rightarrow 2 \uparrow 4$

18. $f(x) = 3(x-4)^2 - 6$

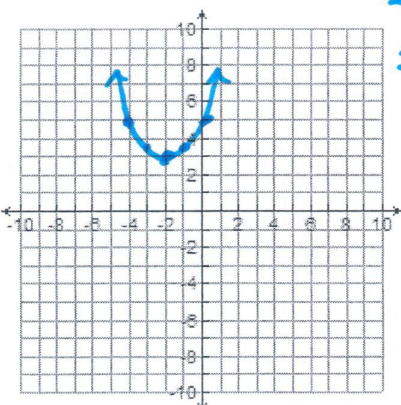
vertex: $(4, -6)$



$\Rightarrow 1 \uparrow 1 \cdot 3 = \uparrow 3$
 $\Rightarrow 2 \uparrow 4 \cdot 3 = \uparrow 12$

19. $f(x) = \frac{1}{2}(x+2)^2 + 3$

vertex: $(-2, 3)$



$\Rightarrow 1 \uparrow 1 \cdot \frac{1}{2} = \uparrow \frac{1}{2}$
 $\Rightarrow 2 \uparrow 4 \cdot \frac{1}{2} = \uparrow 2$