

Review Graphing Transformations

Tuesday, March 24, 2020 9:59 AM



Review Graphing Transformations

Algebra II/Trig

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

Vertex: $x = \frac{-b}{2a} = \frac{-4}{2(-1)} = 2$ $V: (2, 2)$

Y-int: $(0, -2)$

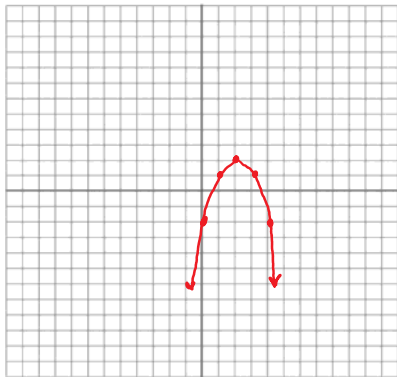
X-ints: use Quadratic Formula (not factorable)

$x = \frac{-4 \pm \sqrt{4^2 - (4 \cdot (-1) \cdot (-2))}}{2 \cdot (-1)} = \frac{-4 \pm \sqrt{16 - (-8)}}{-2} = \frac{-4 \pm \sqrt{24}}{-2} = 2 \pm \sqrt{2}$

Vertex Form: $y = -(x-2)^2 + 2$

Trans:

Reflect x-axis
Right 2
Up 2



Graphing/Transformations Practice

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

Vertex: $(1, 3)$

Y-int: $-(0-1)^2 + 3 = 2 \rightarrow (0, 2)$

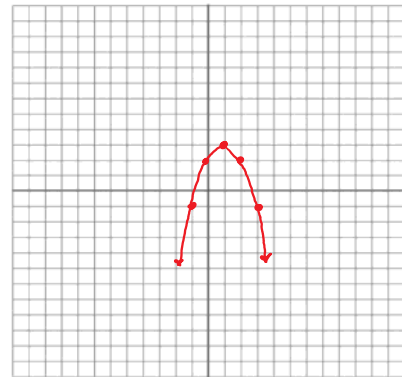
X-ints: $0 = -(x-1)^2 + 3 \rightarrow \sqrt{3} = (x-1)^2 \rightarrow x = 1 \pm \sqrt{3}$

Standard Form: $y = -x^2 + 2x + 2$

Trans:

Reflect x-axis
Right 1
Up 3

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



3. $f(x) = (x+3)(x-3)$ $a=1$ $p=-3$ $q=3$
Vertex: $x = \frac{p+q}{2} = \frac{-3+3}{2} = 0 \rightarrow V: (0, -9)$

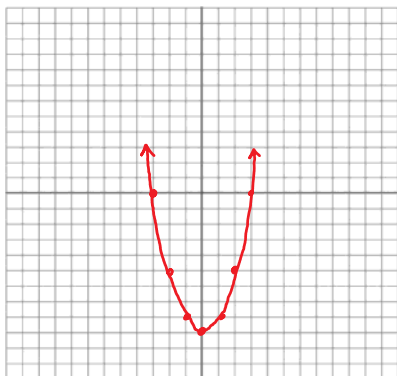
Y-int: $(0, -9)$

X-ints: $(3, 0)$ $(-3, 0)$

Vertex Form: $y = x^2 - 9$

Trans:

Down 9



4. $f(x) = -3x^2 + 12x - 7$

Vertex: $x = \frac{-b}{2a} = \frac{-12}{2(-3)} = 2 \rightarrow V: (2, 5)$

Y-int: $(0, -7)$

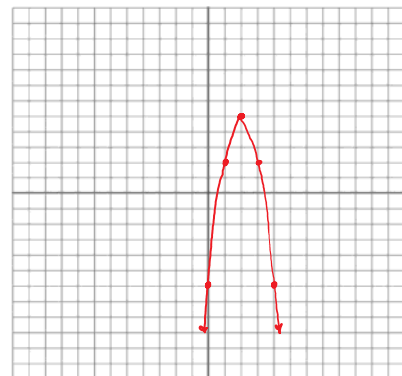
X-ints: Not factorable \rightarrow Quadratic Formula

$x = \frac{-12 \pm \sqrt{(12)^2 - (4 \cdot (-3) \cdot (-7))}}{2 \cdot (-3)} = \frac{-12 \pm \sqrt{60}}{-6} = \frac{-12 \pm 2\sqrt{15}}{-6} = \frac{-6 \pm \sqrt{15}}{-3}$

Vertex Form: $y = -3(x-2)^2 + 5$

Trans:

Reflect x-axis
Narrow by 3
Right 2
Up 5



5. $f(x) = -x(x+3)$ $\begin{matrix} a=-1 \\ p=0 \\ q=-3 \end{matrix}$

Vertex: $x = \frac{p+q}{2} = \frac{0+(-3)}{2} = -1.5 \rightarrow V: (-1.5, 2.25)$

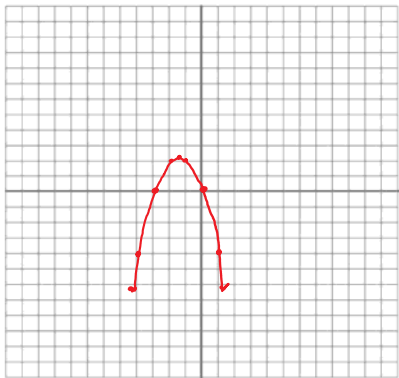
Y-int: $(0, 0)$

X-ints: $(0, 0)$ $(-3, 0)$

Vertex Form: $y = -(x+1.5)^2 + 2.25$

Trans:

Reflect x-axis
Right 1.5
Up 2.25



6. $f(x) = 2(x-2)^2 + 2$

Vertex: $(2, 2)$

Y-int: $(0, 10)$

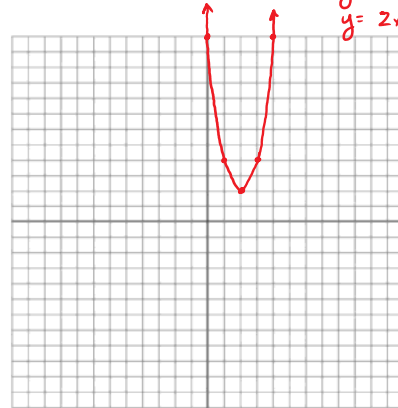
X-ints: $0 = 2(x-2)^2 + 2$
 $\frac{-2}{2} = \frac{2(x-2)^2}{2} \rightarrow \sqrt{-1} = \sqrt{(x-2)^2} \rightarrow x = 2 \pm i$

Standard Form: $y = 2x^2 - 8x + 10$

Trans:

Narrow by 2
Right 2
Up 2

$y = 2(x-2)^2 + 2$
 $y = 2(x-2)(x-2) + 2$
 $y = 2(x^2 - 4x + 4) + 2$
 $y = 2x^2 - 8x + 8 + 2$
 $y = 2x^2 - 8x + 10$



7. $f(x) = (x+2)(x+3)$ $\begin{matrix} a=1 \\ p=-2 \\ q=-3 \end{matrix}$

Vertex: $x = \frac{-2+(-3)}{2} = -\frac{5}{2} \rightarrow V: (-2.5, -2.25)$

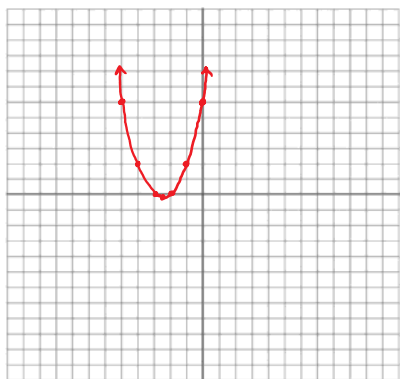
Y-int: $(0, 6)$

X-ints: $(-2, 0)$ $(-3, 0)$

Vertex Form: $y = (x+2.5)^2 - 2.25$

Trans:

Left 2.5
Down .25



8. $f(x) = x^2 + 3x + 2$ $\begin{matrix} a=1 \\ b=3 \\ c=2 \end{matrix}$

Vertex: $x = \frac{-3}{2(1)} = -\frac{3}{2} \rightarrow V: (-1.5, -2.25)$

Y-int: $(0, 2)$

X-ints: $0 = x^2 + 3x + 2$
 $0 = (x+2)(x+1) \rightarrow \begin{matrix} x+2=0 & x+1=0 \\ x=-2 & x=-1 \end{matrix}$

Vertex Form: $y = (x+1.5)^2 - 2.25$

Trans:

Left 1.5
Down .25

