Fill in the chart

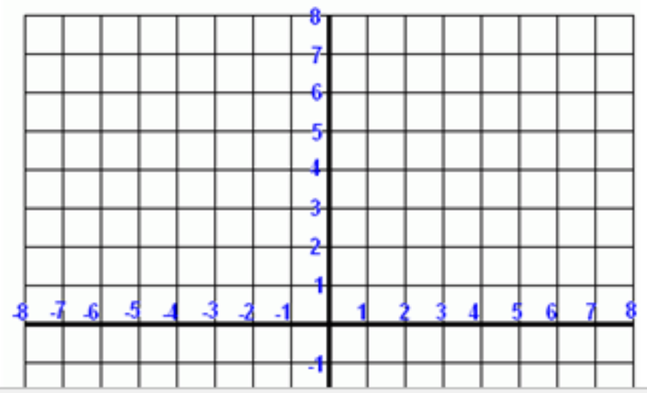
	$y=-2(x-1)^2+4$	$y=(x-3)^2$	$y=3(x+4)^2+2$
stretch factor			
Open up or down			
Vertical shift			
Horizontal shift			
vertex			
Equation of the Axis of symmetry			
y-intercept			
Max/min value			

Factored Form of a Quadratic Relation

Make a table of values and then graph the following equation: $y=x^2+6x+8$

Label ALL important points.

x	$y = x^2 + 6x + 8$	(x,y)
-2	$y = (-2)^2+6(-2)+8 = 0$	(-2, 0)
-1	$y = (-1)^2+6(-1)+8 = 3$	(-1, 3)
0		
1		
2		



HW

Fill in the chart

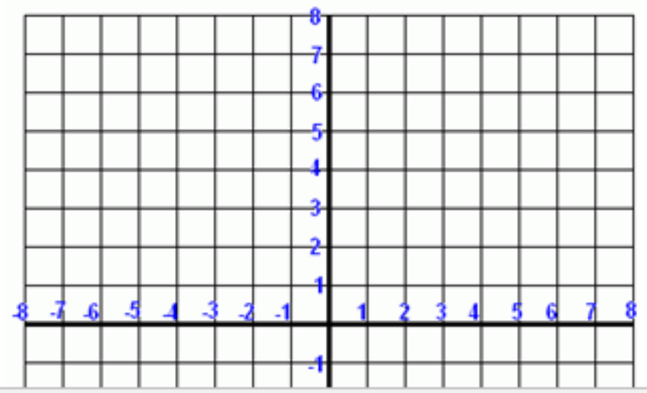
	$y=-2(x-1)^2+4$	$y=(x-3)^2$	$y=3(x+4)^2+2$
stretch factor	shrink 2		
Open up or down	down		
Vertical shift	up 4		
Horizontal shift	right 1		
vertex	(1, 4)		
Equation of the Axis of symmetry	$x=1$		
y-intercept			
Max/min value	max		

Factored Form of a Quadratic Relation

Make a table of values and then graph the following equation: $y=x^2+6x+8$

Label ALL important points.

x	$y = x^2 + 6x + 8$	(x,y)
-2	$y = (-2)^2+6(-2)+8 = 0$	(-2, 0)
-1	$y = (-1)^2+6(-1)+8 = 3$	(-1, 3)
0		
1		
2		



Factored Form of a Quadratic Relation

Make a table of values and then graph the following equation: $y=x^2+6x+8$
Label ALL important points.

x	$y = x^2 + 6x + 8$	(x,y)
-2	$y = (-2)^2+6(-2)+8 = 0$	(-2, 0)
-1	$y = (-1)^2+6(-1)+8 = 3$	(-1, 3)
0	$Y=(0)^2+6(0)+8=8$	(0,8)
-3	$(-3)^2+6(-3)+8=-1$	(-3,-1)
-4	$(-4)^2+6(-4)+8=0$	(-4,0)

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

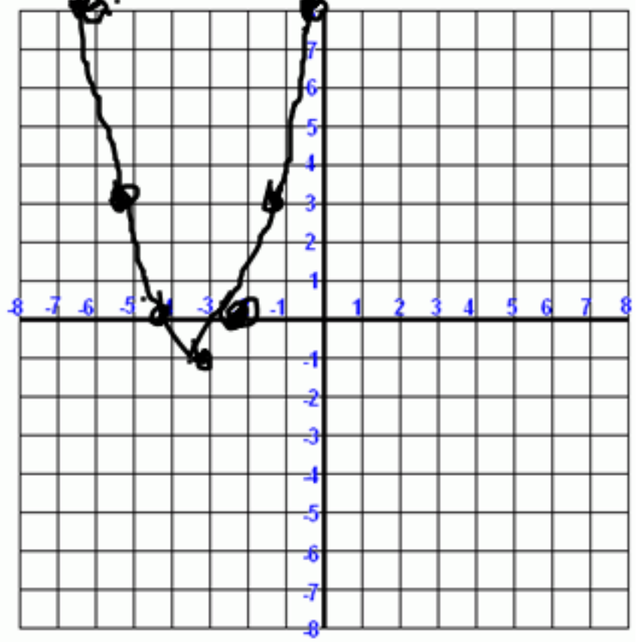
$y=(x+2)(x+4)$

$x+2=0 \quad x+4=0$

$x=-2 \quad x=-4$

$S.S.\{-2,-4\}$

(-5,3)
(-6,8)



Factored form of a Quadratic Equation is

Factored form of a Quadratic Equation is

$$y = a(x-s)(x-t)$$

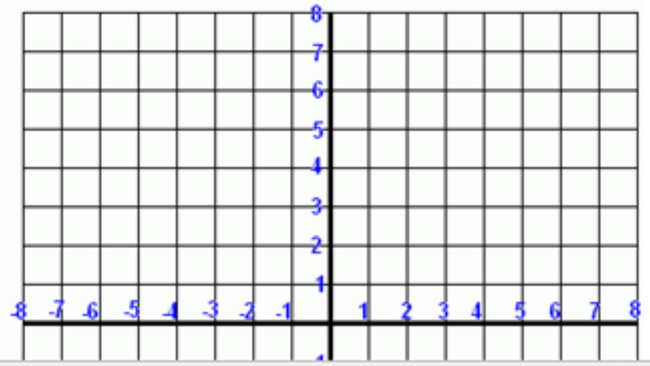
where *s* and *t* are the zeros or x-int/roots and *a* is the stretch factor and direction of opening.

Zeros occur when y = 0.
y-intercept occurs when x = 0

The ***vertex (maximum/minimum)*** can be found by plugging in the ***x* value** of the **axis of symmetry** and **solving for y**

1. For the following quadratic relation:
   i) Determine the **zeros (aka the "solution set")**
   ii) Determine the **y-intercept** (x = 0)
   iii) Determine the **axis of symmetry**
   iv) Determine the coordinates of the **vertex**
   v) Sketch the graph

$y = x^2 + 10x + 16$



1. For the following quadratic relation:
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$y = x^2 + 10x + 16$

i) $y = x^2 + 10x + 16$

$y = (x+2)(x+8)$

$x+2=0 \quad x+8=0$

$x = -2 \quad x = -8$

zeroes: $\{-2, -8\}$

ii) $y = x^2 + 10x + 16$

$y = 0^2 + 10(0) + 16$

$y = 16$

iii) a.o.s $x = -5$

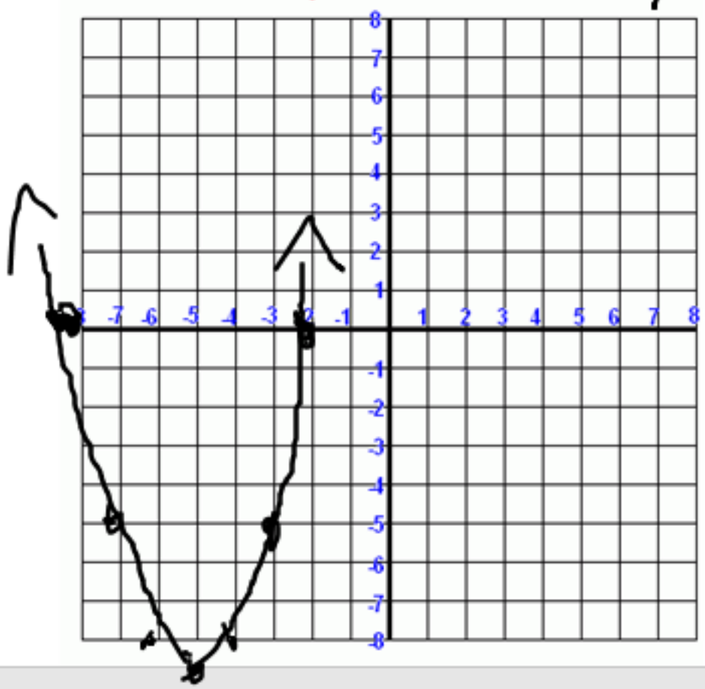
iv) $y = x^2 + 10x + 16$

$y = (-5)^2 + 10(-5) + 16$

$y = 25 - 50 + 16$

$y = -9$

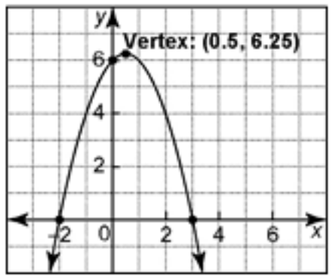
Vertex $\rightarrow (-5, -9)$



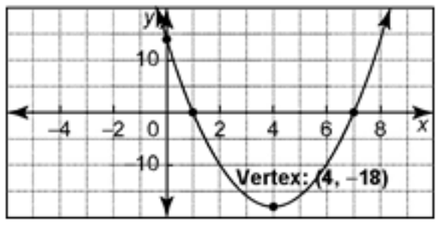
Section 5.5 The *x*-Intercepts of a Quadratic Relation

1. Find the x-intercepts of each quadratic relation.

a)

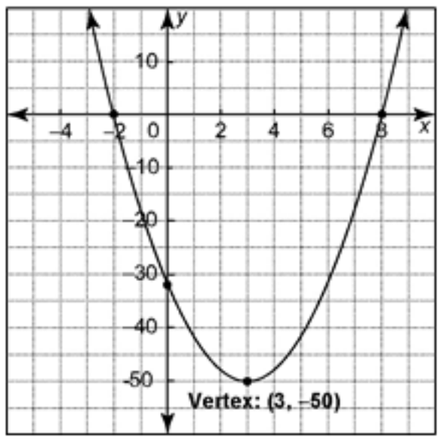


b)

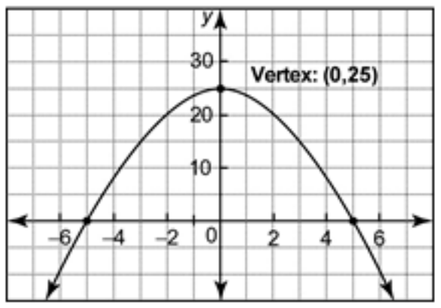


2. Find the zeros of each quadratic relation.

a)



b)



3. Find the zeros of each quadratic relation.

a) $y = (x - 1)(x + 2)$
b) $y = 3(x + 7)(x - 5)$
c) $y = -2x(x - 6)$
d) $y = -(x + 6)(x - 9)$
e) $y = 4(x + 8)(x - 2)$
f) $y = 6(x - 6)(x + 6)$

4. Find the zeros by factoring. Check by graphing.

a) $y = x^2 + 8x + 15$
b) $y = x^2 - 2x - 8$
c) $y = 2x^2 - 18$
d) $y = 3x^2 - 12x - 36$
e) $y = -x^2 + 4x + 5$
f) $y = 6x^2 - 24$

5. Find the zeros by factoring.

a) $y = 0.5x^2 + 2x - 6$
b) $y = 1.5x^2 - 9x - 24$

6. Which relation has more than one x-intercept? How do you know?

a) $y = -3(x + 2)^2 + 1$
b) $y = 2(x + 5)^2 + 2$