

① Algebra:  $x =$

② Graph:  $x$ -int. ( $x =$  )  $\rightarrow y = 0$

Example 2: **Solve** for  $f(x) = x^2 - 8x + 12$   $a=1$   $b=-8$   $c=12$

1) Find the Vertex

$$x = \frac{-b}{2a}$$

$$x = \frac{-(-8)}{2(1)}$$

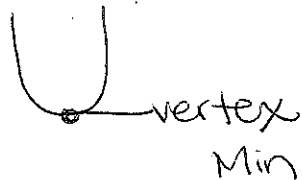
$$x = 4$$

$x$	$x^2 - 8x + 12$	$y$	$(x, y)$
1		5	(1, 5)
2		0	(2, 0)
3		-3	(3, -3)
4	$4^2 - 8(4) + 12$	-4	(4, -4)
5		-3	(5, -3)
6		0	(6, 0)
7		5	(7, 5)

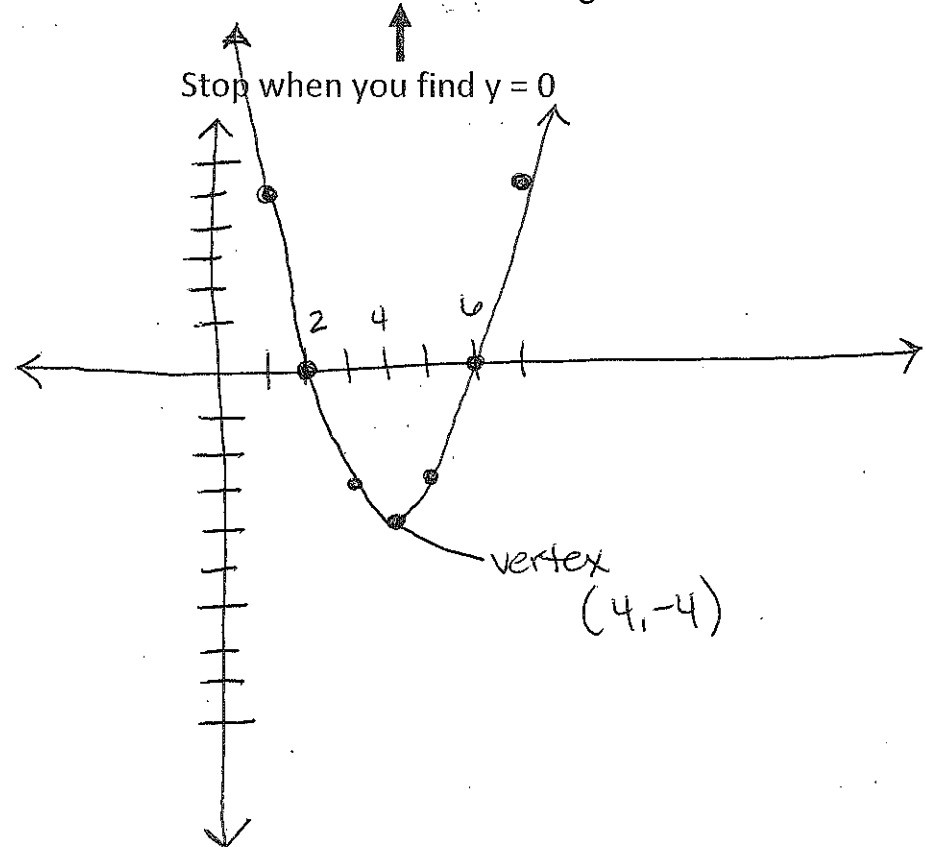
2) Let's check our work: How many solutions does the function have?

- Graph the vertex
- Is this a SMILEY or SAD face?
- How many times does it touch the  $x$ -axis? 2

$$a = +$$



Answer:  $x$ -int. @  $x = 2, 6$



Example 3: Solve for  $f(x)$ :  $x^2 + 2x - 15 = 0$

1) Find the Vertex

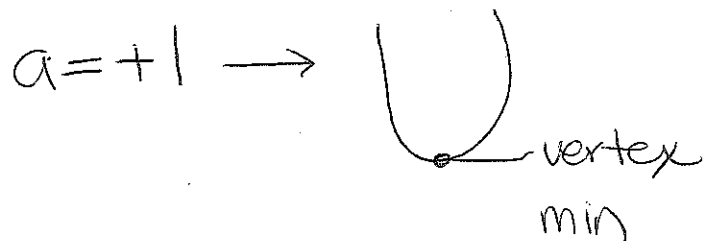
$$x = \frac{-b}{2a}$$

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

x	$x^2 + 2x - 15$	$f(x)$	$(x, y)$
-5			$(-5, 0)$
-4			
-3			
-2			
-1		-16	$(-1, -16)$
0		-15	$(0, -15)$
1	$1^2 + 2(1) - 15$	-12	
2	$2^2 + 2(2) - 15$	-7	
3	$3^2 + 2(3) - 15$	0	$(3, 0)$

2) Let's check our work: How many solutions does the function have?

- Graph the vertex
- Is this a SMILEY or SAD face?
- How many times does it touch the x-axis?



Answer: x-int. @  $x = -5, 3$

