

$$3i(-5i)^2 \quad (-5i)(-5i)$$

$$3i(25i^2) = 75i^3$$

$$3i(-25) \quad -75i$$

$$-75i$$

$$i^3 = -i$$

$$\frac{10+i}{4-i} \cdot \frac{4+i}{4+i}$$

$$\frac{40 + 10i + 4i + i^2}{16 + 4i - 4i - i^2}$$

(-1)  
2  
(-1)  
1

$$= \frac{39 + 14i}{17}$$

$$= \frac{39}{17} + \frac{14}{17}i$$

$$\sqrt{-13} \cdot \sqrt{-26}$$

$$\sqrt{13} i \cdot \sqrt{26} i$$

$$\sqrt{13 \cdot 26} i^2$$

(-1)

$$-\sqrt{13 \cdot 26}$$

$$\sqrt{(13 \cdot 13) \cdot 2}$$

$$-13\sqrt{2}$$

$$338$$

2  $\wedge$  169

13 13

# Quiz

Simplify.

$$72 = (2 \cdot 2 \cdot 2 \cdot 3 \cdot 3)$$

$$\sqrt{72} = \sqrt{2^3 \cdot 3^2} = 2^1 \cdot 3^1 \cdot 2^1 = 2 \cdot 3 \cdot 2 = 12$$

$$\sqrt{2i} = \sqrt{2}i$$

1.  $\sqrt{-72}$

2.  $(4 + 2i) + (-7 + 8i)$

$$-3 + 10i$$

3.  $(6 - 3i)(4 + 3i)$   $24 + 18i - 12i + 9i^2$

$$33 + 6i$$

4.  $\frac{8}{2 + 3i} \cdot \frac{2 - 3i}{2 - 3i}$

$$\frac{16 - 24i}{4 - 6i + 6i + 9i^2} = \frac{16}{13} - \frac{24}{13}i$$

# Quadratic Functions:

- the highest power of  $x$  in any term is 2.

- their graphs are all parabolas



## STANDARD FORM:



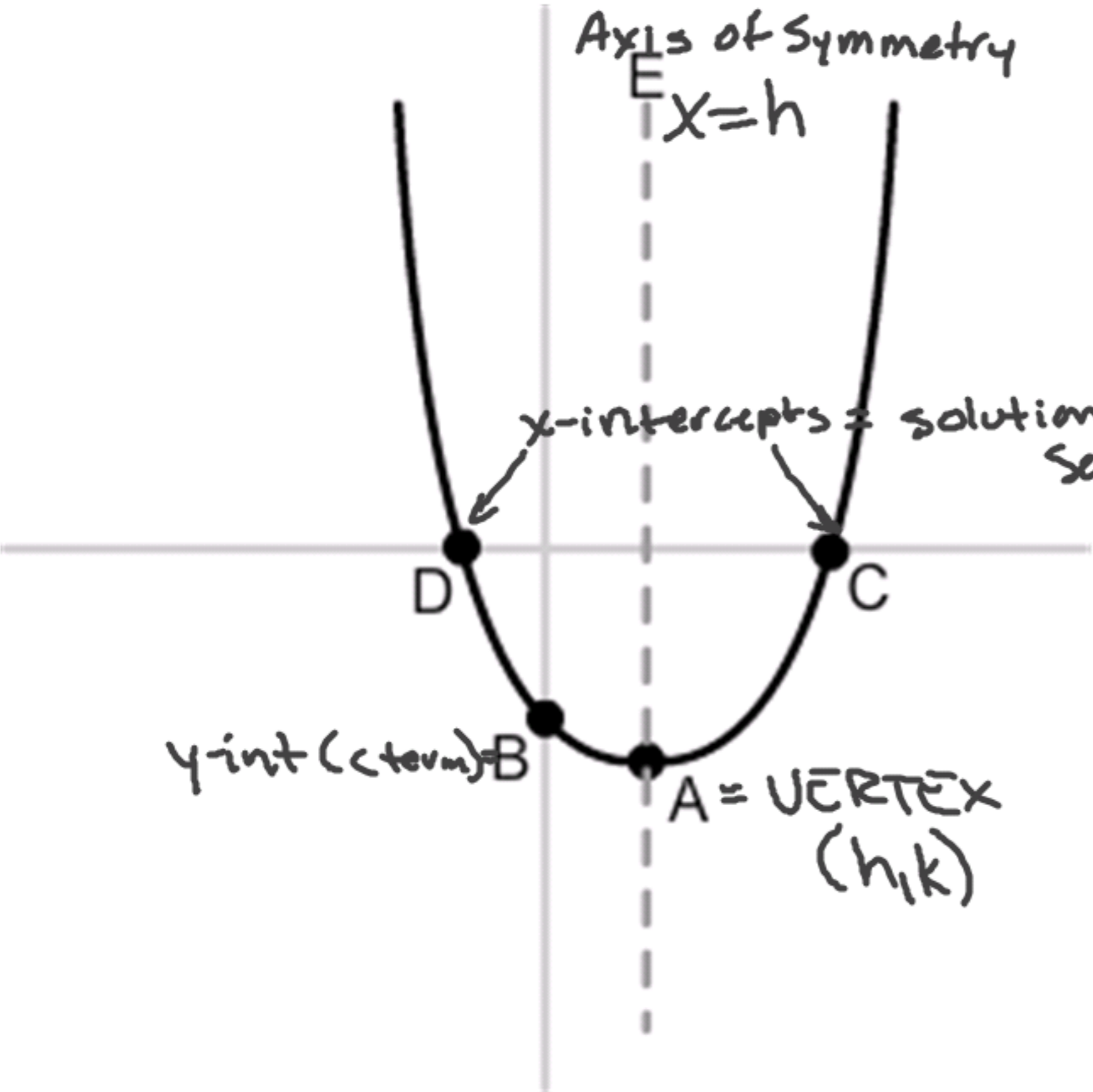
$$f(x) = ax^2 + bx + c$$

$$y = 4x^2 - 7x + 5 \quad \begin{array}{l} a=4 \\ b=-7 \\ c=5 \end{array}$$

$$f(x) = 3x - 2x^2 + 6 \quad \begin{array}{l} a=-2 \\ b=3 \\ c=6 \end{array}$$

- \* if  $a$  is positive the parabola opens up
- \* if  $a$  is negative the parabola opens down
- \*  $c$  is the  $y$ -intercept of the parabola

Axis of Symmetry  
 $x=h$



x-intercepts = solution to the equation when  $Set = 0$ .

y-int (c term) = B

A = VERTEX  
(h, k)

To Find the Vertex:  $(h, k)$

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

$$f(x) = ax^2 + bx + c$$

$$h = \frac{-12}{2(3)} = \frac{-12}{6} = -2$$

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

$$a = 3$$

$$b = 12$$

$$h = -2$$

$$\text{A.O.S.} = x = -2$$

$$k = f(h)$$

$$k = 3(-2)^2 + 12(-2) - 7$$

$$12 - 24 - 7 = -19$$

$$\text{Vertex: } (-2, -19)$$

$$f(x) = 3x^2 + 4$$

y-int: 4

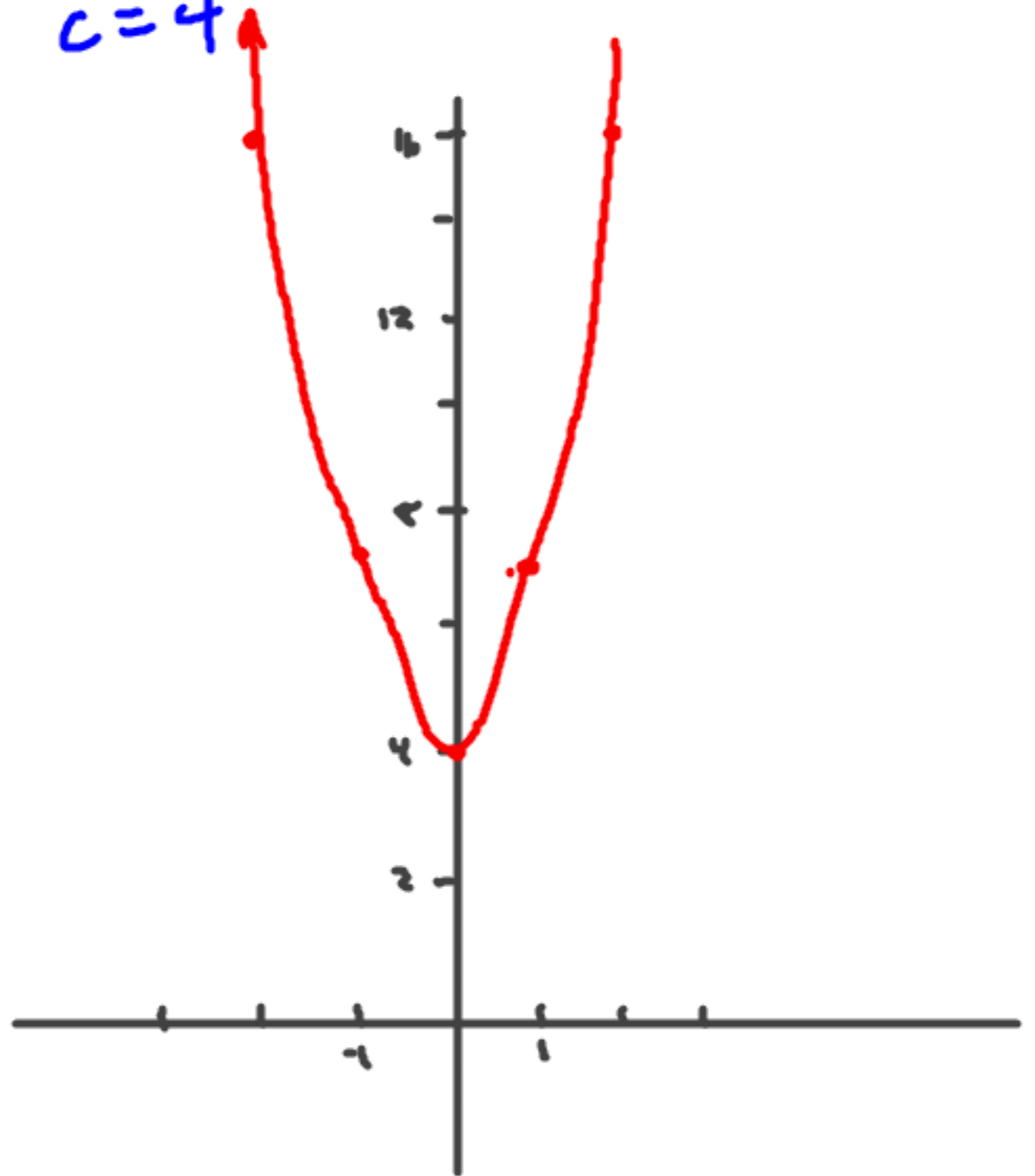
$$h = \frac{-0}{2(3)} = \frac{0}{6} = 0$$

$$\text{A.O.S.} = x = 0$$

x	y
-2	$3(-2)^2 + 4 = 16$
-1	$3(-1)^2 + 4 = 7$
0	$3(0)^2 + 4 = 4$
1	$3(1)^2 + 4 = 7$
2	$3(2)^2 + 4 = 16$

$$a=3$$
$$b=0$$
$$c=4$$

tell A.O.S., y-int,  
x-coordinate of vertex.



$$f(x) = x^2 - 6x + 1$$

y-int: 1

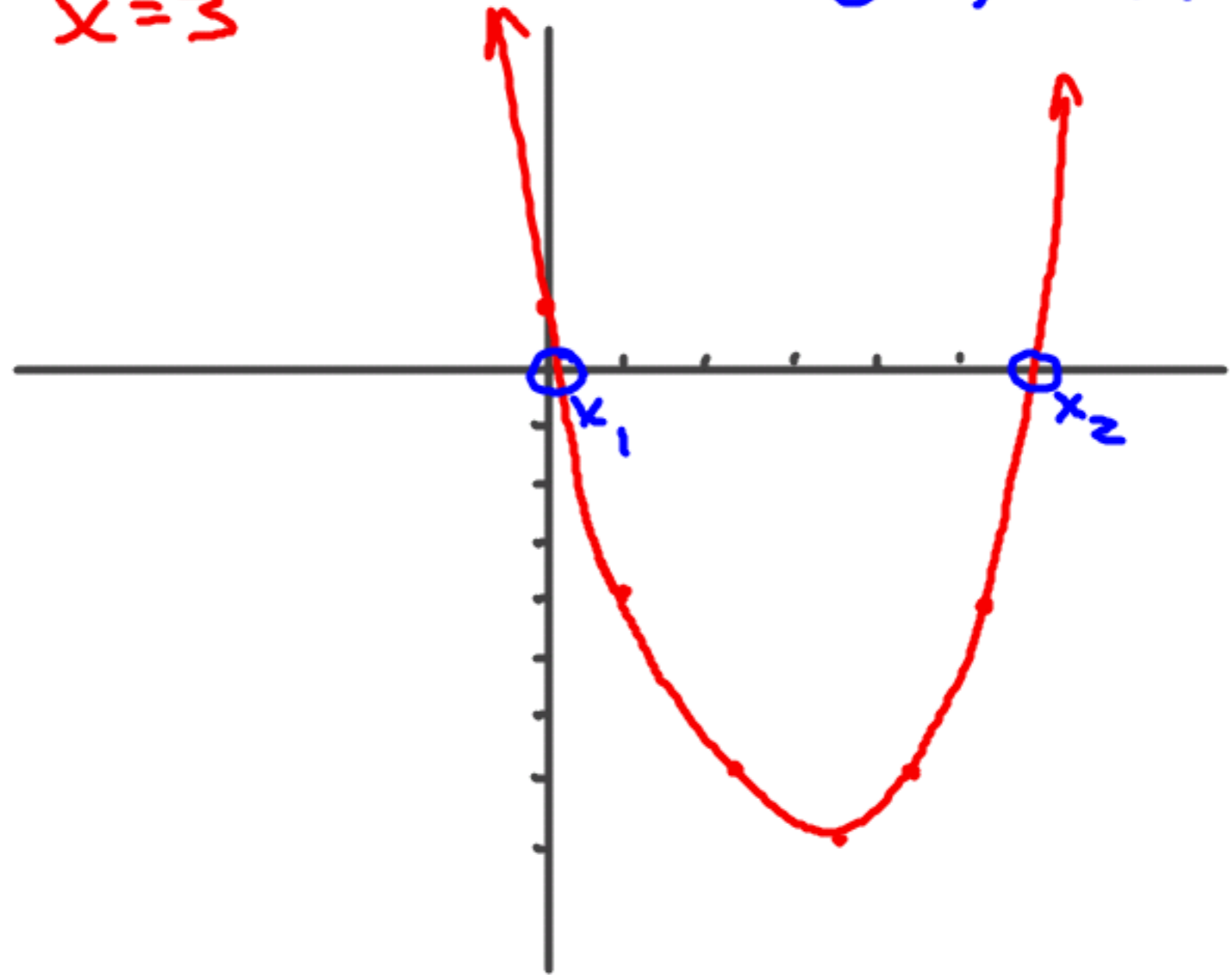
x-coord. vertex:  $h = \frac{-(-6)}{2(1)} = \frac{6}{2} = 3$

A.O.S.:  $x = 3$

$$0 = x^2 - 6x + 1$$

Graph:

x	y
1	-4
2	-7
3	-8
4	-7
5	-4



291: 14-38 Every other even