

# Warm up

AI

1. Write the following in factored form.

a)  $y = x^2 - 7x + 6$  <sup>add</sup>  $-1 \text{ \& } -6$  <sup>mult.</sup> } factor!

$$y = (x-1)(x-6)$$

a)  $y = 3x^2 + 8x - 3$   $a \cdot c = -9$   $b = 8$  }  $9 \text{ \& } -11$

$$y = 3x^2 + 9x - 1x - 3$$

$$3x(x+3) - 1(x+3) = \boxed{(3x-1)(x+3)}$$

c)  $y = 2x^2 + 4x - 12$   
 $y = 2(x^2 + 2x - 6)$   
 $y = 2(x+9)(x-7)$

2. Now for a-c set  $y=0$  & find the zeros.

a)  $y = (x-1)(x-6)$   
 $0 = (x-1)(x-6)$   
 $x-1=0$   $x-6=0$   
 $\boxed{x=1}$   $\boxed{x=6}$

b)  $y = (3x-1)(x+3)$   
 $0 = (3x-1)(x+3)$   
 $3x-1=0$   $x+3=0$   
 $3x=1$   $x=-3$   
 $\boxed{x=1/3}$   $\boxed{x=-3}$

c)  $y = 2(x+9)(x-7)$   
 $0 = 2(x+9)(x-7)$   
 $x+9=0$   $x-7=0$   
 $\boxed{x=-9}$   $\boxed{x=7}$

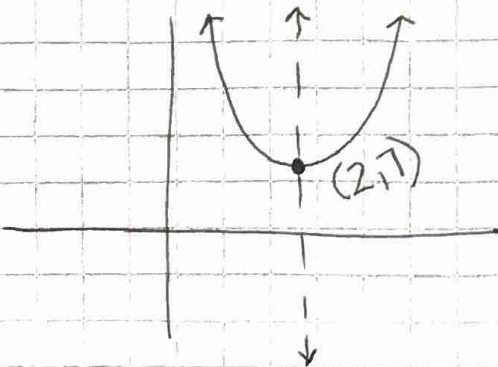
3.  $y = 7(x-2)^2 + 7$

a) What form is this? vertex

b) Find the vertex & AOS/LoS.

$$V: (2, 7)$$

LoS:  $x=2$  (vertical)



## finding the roots/zeros/x-int

$$\textcircled{1} \quad y = (x-7)(2x+3)$$

$$0 = \underbrace{(x-7)} \underbrace{(2x+3)}$$

$$x-7=0$$

$$\boxed{x=7}$$

$$2x+3=0$$

$$2x=-3$$

$$\boxed{x=-3/2}$$

$$\textcircled{2} \quad y = 4(x+2)(x-7)$$

$$0 = 4 \underbrace{(x+2)} \underbrace{(x-7)}$$

$$x+2=0$$

$$\boxed{x=-2}$$

$$x-7=0$$

$$\boxed{x=7}$$

$$\textcircled{3} \quad y = x(x-5)(x-9)$$

$$0 = \underbrace{x} \underbrace{(x-5)} \underbrace{(x-9)}$$

$$\boxed{x=0}$$

$$x-5=0$$

$$\boxed{x=5}$$

$$x-9=0$$

$$\boxed{x=9}$$

$$\textcircled{4} \quad y = x^3 - 2x^2 - 8x$$

$$y = x(x^2 - 2x - 8) \quad \left. \vphantom{y = x(x^2 - 2x - 8)}} \right\} \text{factor}$$

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

$$0 = \underbrace{x} \underbrace{(x-4)} \underbrace{(x+2)}$$

$$\boxed{x=0}$$

$$x-4=0$$

$$\boxed{x=4}$$

$$x+2=0$$

$$\boxed{x=-2}$$