

QUADRATICS REVIEW

Formulas to Know

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$h(t) = \frac{1}{2}at^2 + v_0t + s_0$$

$$a = \underline{-9.8 \text{ m/s}^2}$$

$$a = \underline{-32 \text{ ft/s}^2}$$

No calculator page

#1, 2, 3

Find vertex

Vertex Form

$$y = a(x-h)^2 + K$$

Vertex: (h, K)

$$y = ax^2 + bx + c$$

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

$y = \text{sub in } x$

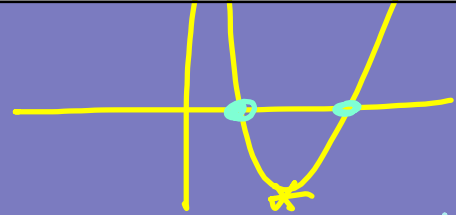
Intercept Form

$$y = a(x-p)(x-q)$$

$\xrightarrow{x\text{-int}}$ $x-p=0$ $x-q=0$
 $x=p$ $x=q$

$x\text{-coord} = \frac{p+q}{2}$

$y\text{-coord} = \text{Sub in } x\text{-coord}$



SOLVE. = Finds $x\text{-ints}$ (zeros).

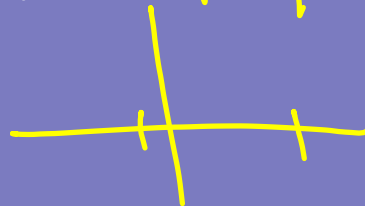
1) Set = 0. (Keep x^2 positive)

A) Factoring

B) Quadratic

C) Completing the Square

D) Graphing on Calc.



Find vertex.

$$y = -\frac{1}{3}(x-4)(x+2)$$

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

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

Vertex: $x = \frac{4+(-2)}{2} = 1$

$$y = -\frac{1}{3}(1-4)(1+2)$$

$$= +\frac{1}{3} \cdot 3$$

$$= 3$$

$$(1, 3)$$

line of symm
 $x=1$

$$y = 42(x-91)^2 + 147$$

Vertex: $(91, 147)$

line of symmetry: $x=91$

direction: up

width: narrow

1 a) $y = -3x^2 - 8$

$$-3(x-0)^2 - 8$$

Vertex: $(0, -8)$

$$y < -2x^2 + 12x - 13$$

Vertex:

$$x = \frac{-b}{2a} = \frac{-12}{2(-2)}$$

$$x = 3$$

0	0
1	-2
2	-8
3	-18

$$y = -2(3)^2 + 12(3) - 13$$

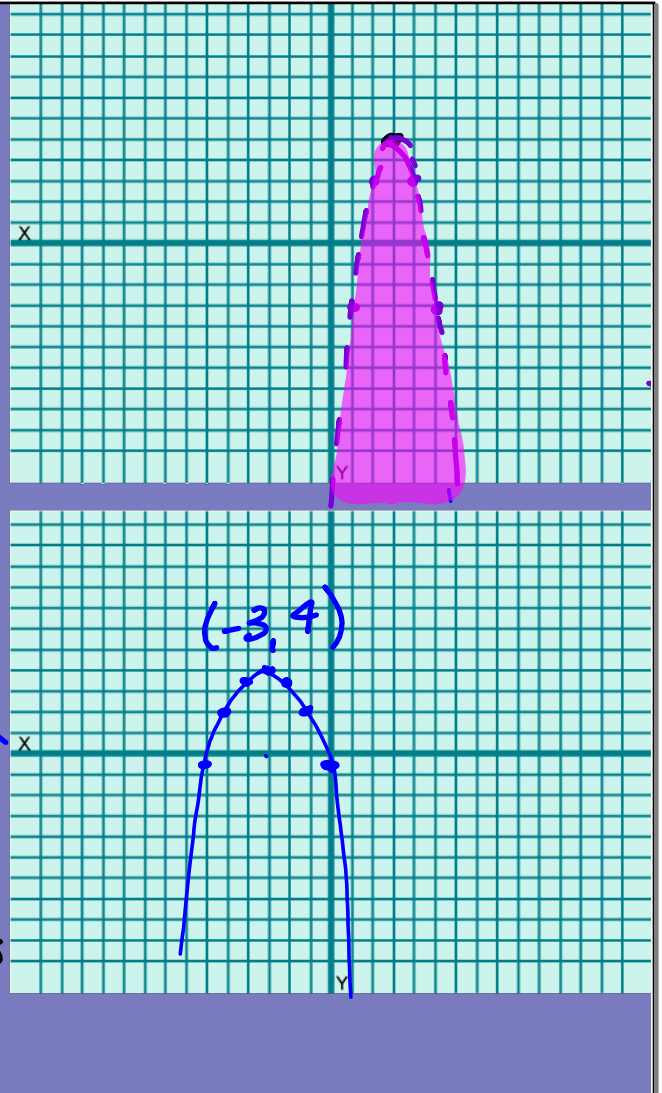
$$= -18 + 36 - 13$$

$$= 5 \quad (3, 5)$$

$$y = a(x-h)^2 + k$$

$$y = -\frac{1}{2}(x+3)^2 + 4$$

0	0
1	-1.2
2	-2
3	-4.5



Like #3

Vertex: $(-7, -2)$ Point: $(-5, 10)$
x y

$$y = a(x+7)^2 - 2$$

$$10 = a(-5+7)^2 - 2$$

$$10 = 4a - 2$$

$$12 = 4a$$

$$3 = a$$

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

#4 Solve by Factoring

Set = to 0!

$$2x^2 - 3x = 20$$

$$2x^2 - 3x - 20 = 0$$

$$(2x+5)(x-4) = 0$$

$$2x+5=0 \quad x-4=0$$

$$2x = -5$$

$$x = -5/2$$

$$x = 4$$

Like b

$$7x = 14x^2$$

$$0 = 14x^2 - 7x$$

Pull

out

Common

factors!

$$0 = 7x(2x-1)$$

$$7x=0 \quad 2x-1=0$$

$$x=0 \quad 2x=1$$

$$x = 1/2$$

Like #5 - Solve by completing the square.

$$\frac{5x^2}{5} - \frac{30x}{5} + \frac{10}{5} = \frac{0}{5}$$

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

$$x^2 - 6x + \underline{9} = -2 + 9$$

$$\sqrt{(x-3)^2} = \sqrt{7}$$

$$x-3 = \pm\sqrt{7}$$

$$x = 3 \pm \sqrt{7}$$

7/ Roots: $3, -\frac{2}{5}$

Find eq.

Reverse
factoring

$$x = 3 \quad x = -\frac{2}{5}$$

$$x - 3 = 0 \quad 5x = -2$$

$$5x + 2 = 0$$

$$(x - 3)(5x + 2) = 0$$

$$5x^2 + 2x - 15x - 6 = 0$$

$$5x^2 - 13x - 6 = 0$$