HW 3 - 6: Answers

Explain - Read your answer to your partner.

Does your partner think it is a good explanation?

1 - 3: Check with Partner

Graph each of the parabolas given without the use of a calculator. Find and label all parts.

1. $(y + 2)^2 = 4(x - 3)$ $y^2 = +$
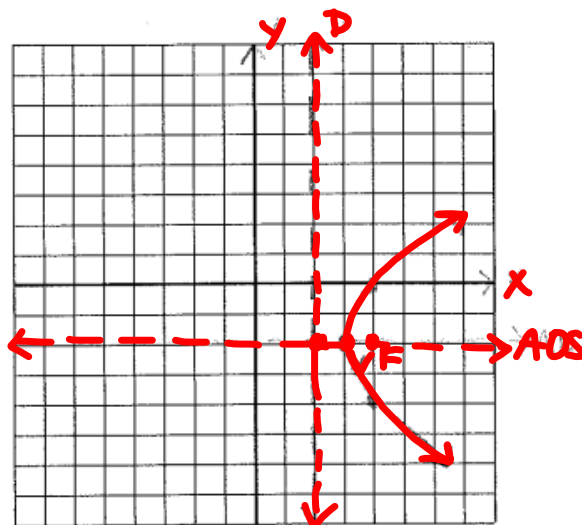
|4p| = ___4___

p = ___1___

Vertex: __(3, -2)__

Focus: __(4, -2)__

Directrix: __x = 2__

AOS: __y = -2__

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

$x^2 = -$ ↻

$|4p| =$ __2__

$p =$ __½__

Vertex: __(2,-3)__

Focus: __(2, -7/2)__

Directrix: __$y = -5/2$__

AOS: __$X = 2$__
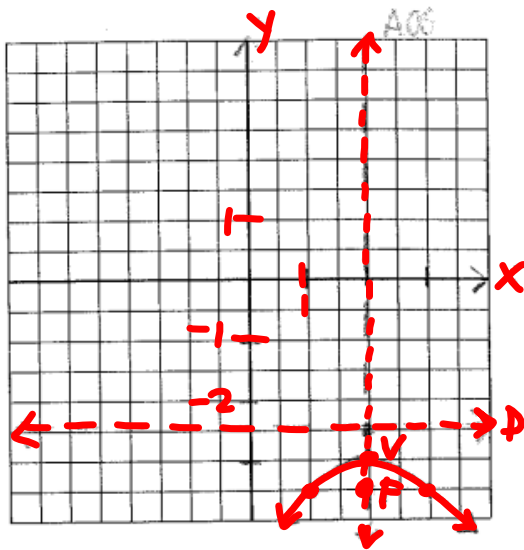
3. $(y - 1)^2 = -8(x - 2)$ $y^2 = -$ 》

   $|4p| = \underline{\quad 8 \quad}$

   $p = \underline{\quad 2 \quad}$

   Vertex: $\underline{\quad (2, 1) \quad}$

   Focus: $\underline{\quad (0, 1) \quad}$

   Directrix: $\underline{\quad X = 4 \quad}$

   AOS: $\underline{\quad y = 1 \quad}$
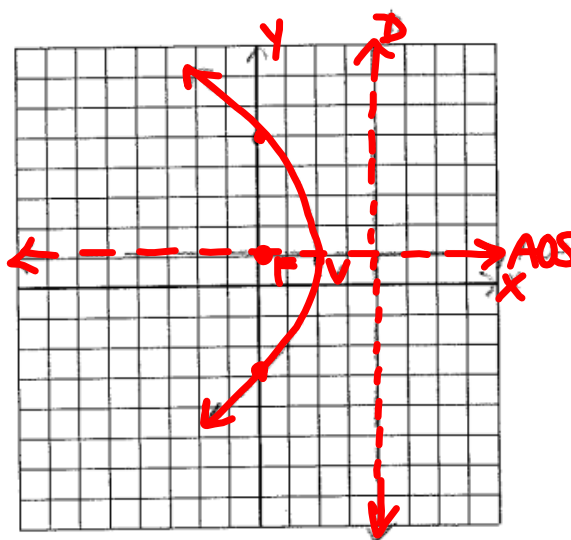
U3D6

More

Parabolas

Write the equations of the parabolas in standard form. Find all required parts and graph.

1. $x^2 - 4x - 4y + 8 = 0$ → **Vertex** $(x-h)^2 = 4p(y-k)$

$x^2 - 4x + \boxed{4} = 4y - 8 + \boxed{4}$

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

$(x-2)^2 = 4(y-1)$

$|4p| = \underline{\quad 4 \quad}$ (2+2)

$x^2, +$

$p = \underline{\quad 1 \quad}$ up
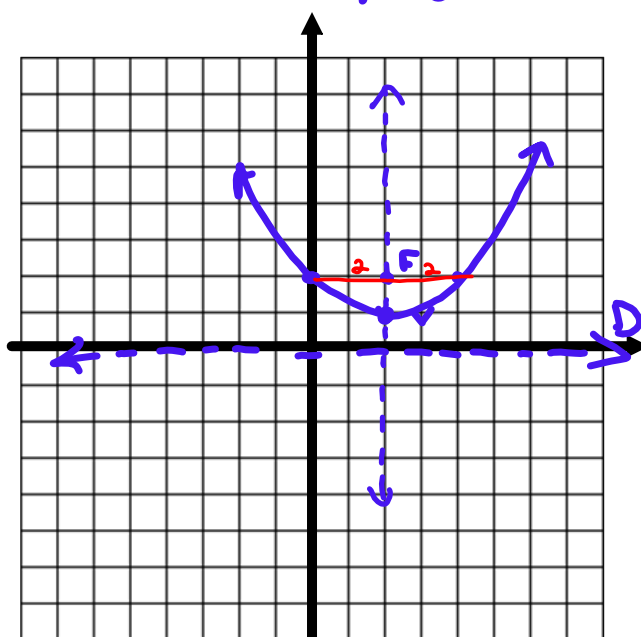
Vertex: $\underline{(2,1)}$

Focus: $\underline{(2,2)}$

Directrix: $\underline{y=0}$

AOS: $\underline{x=2}$

2. $y^2 + 8x + 6y + 25 = 0$ $(y-k)^2 = 4p(x-h)$

$y^2 + 6y + \boxed{9} = -8x - 25 + \boxed{9}$

$(y+3)^2 = -8x - 16$

$(y+3)^2 = -8(x+2)$

$y^2, -$

$|4p| = \underline{-8 \quad (4+4)}$

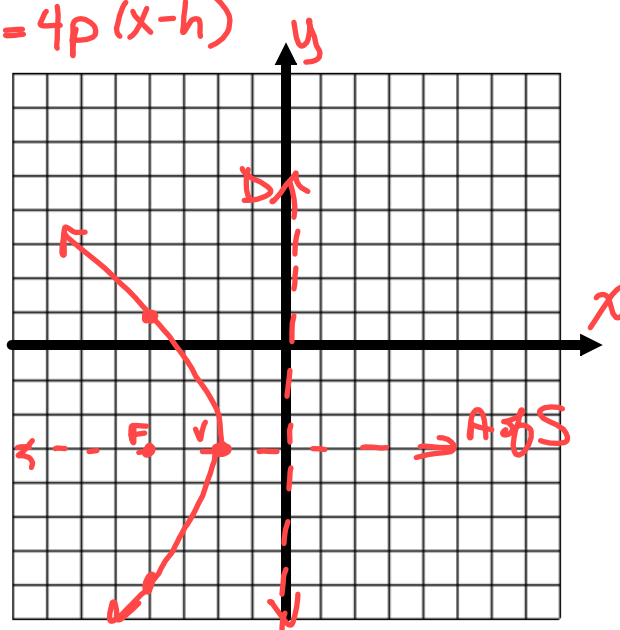$p = \underline{-2 \quad left}$

Vertex: $\underline{\text{(*)} (-2,-3)}$

Focus: $\underline{(-4,-3)}$

Directrix: $\underline{x = 0}$

AOS: $\underline{y = -3}$

3. $y^2 - 4x - 4y - 8 = 0$

$y^2 - 4y + \boxed{4} = 4x + 8 + \boxed{4}$

$(y-2)^2 = 4x + 12$

$(y-2)^2 = 4(x+3)$

$|4p| = \underline{\quad 4 \quad}$
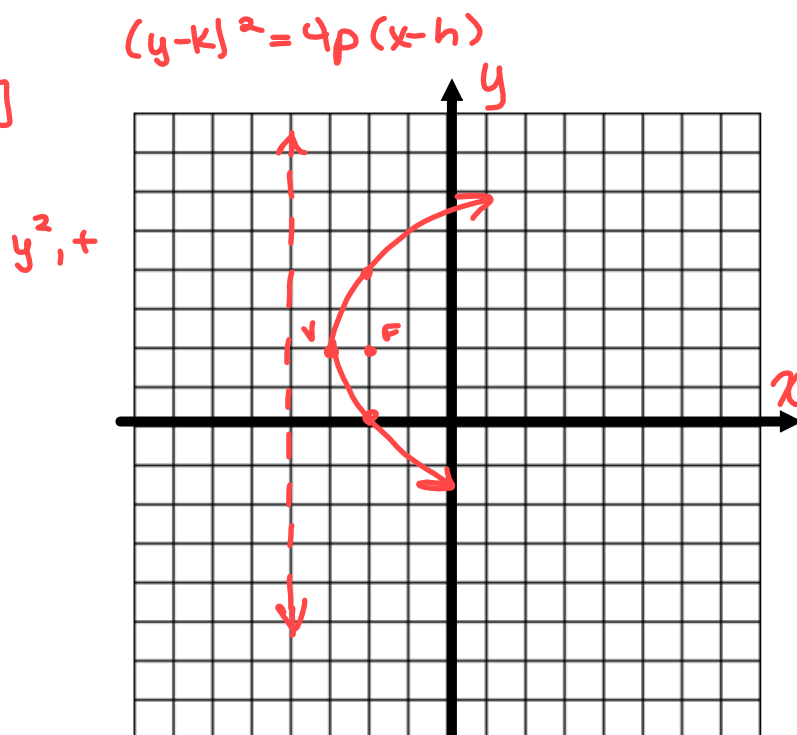
$p = \underline{\quad 1 \quad}$ Rt

Vertex: $\underline{(-3,2)}$

Focus: $\underline{(-2,2)}$

Directrix: $\underline{x = -4}$

AOS: $\underline{y=2}$

$(y-k)^2 = 4p(x-h)$
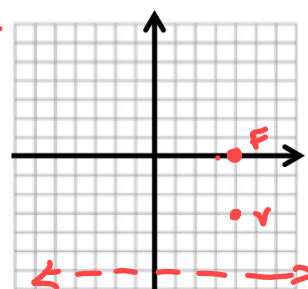
$y^2, +$

4. The directrix of the parabola $12(y + 3) = (x - 4)^2$ has the equation $y = -6$. Find the coordinates of the focus of the parabola. (from the A2CC Regents exam, 6/16)

$V\ (4,-3)$ $4p=12$ $x^2, +$
$p=3$ yp

$$F\ (4,0)$$

5. Write the equation in vertex form, then solve for y.

$x^2 - 4x - 16y - 12 = 0$ $(x-h)^2 = 4p(y-k)$

$x^2 - 4x + \boxed{4} = 16y + 12 + \boxed{4}$

$(x-2)^2 = 16y + 16$

$(x-2)^2 = 16(y+1)$

$\left(\tfrac{1}{16}\right)(x-2)^2 = 16(y+1)\left(\tfrac{1}{16}\right)$

$\tfrac{1}{16}(x-2)^2 = y+1$
$\qquad -1 \qquad\qquad -1$

$$\tfrac{1}{16}(x-2)^2 - 1 = y$$