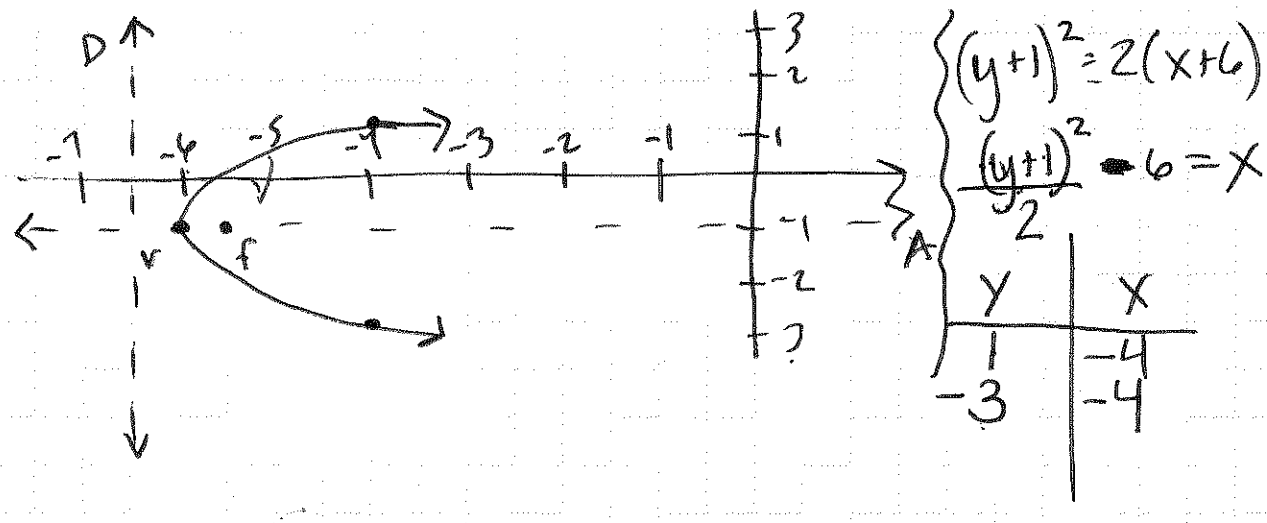
7-1-2 Parabolas

Graphing

$(y+1)^2 = 2(x+6)$ $\quad (y-k)^2 = 4p(x-h)$ $\quad p = \frac{1}{2}$

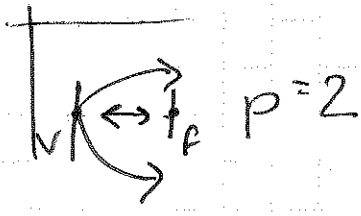
V: $(-6,-1)$ Focus $(-5.5,-1)$ ~~Eq~~ A: $y=-1$ D: $x=-6.5$



Write equations from given characteristics

Vertex, focus, directrix, axis of sym, point, orientation

a) focus $(3,-4)$ vertex $(1,-4)$



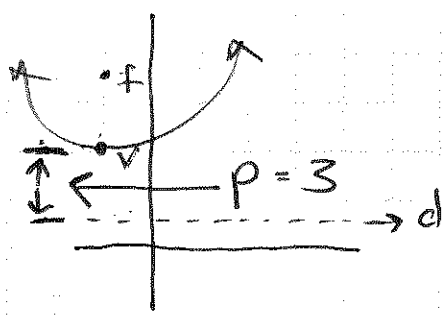
$h=1$ $k=-4$ $\quad (y-k)^2 = 4p(x-h)$

$$\boxed{(y+4)^2 = 8(x-1)}$$

① orientation

② h, k, p or x, y

b) vertex $(-2,4)$ dir $y=1$

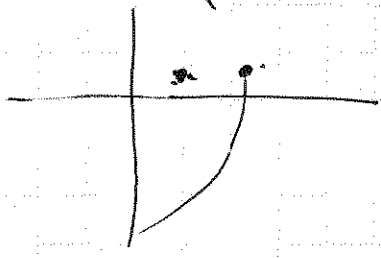


$(x-h)^2 = 4p(y-k)$

$h=-2 \quad k=4 \quad p=3$

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

c) focus $(2,1)$ open left contains $(\overset{x}{2}, \overset{y}{5})$



vertex (h,k) focus $(h+p,k)$

$k=1$ $\qquad h+p=2$

$(y-k)^2 = 4p(x-h) \qquad h = 2-p$

$h = 2-(-2)$

$= 4$

$(5-1)^2 = 4p(2-(2-p))$

$4^2 = 4p^2 \qquad p^2 = 4 \qquad p = \pm 2$

$$\boxed{(y-1)^2 = -8(x-4)}$$

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