Focus for $p = \frac{1}{2}$ + vertex $= (-2, 1)$

Focus $(h, k+p) = (-2, 1 + \frac{1}{4}) = (-2, \frac{5}{4})$

dir: $y = k - p =$ ~~$2 - \frac{1}{4} = -9/4$~~

$y = 1 - \frac{1}{4} = \frac{3}{4}$

5.3 p.155 $\quad x = y^2 \quad y = x^2$

2c) $y^2 - 6y - 2x + 17 = 0$

$[y^2 - 6y + 9] + (17 - 9) = 2x$ isolate x

$y^2 - 6y + 9 + 8 = 2x$

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

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

vertex: $(4, 3)$

$\frac{1}{4p} = \frac{1}{2}$

$4p = 2, \; p = \frac{1}{2}$

focus (

focus $(h+p, k) = (4 + \frac{1}{2}, 3) = (\frac{9}{2}, 3)$

directrix $x = h - p = 4 - \frac{1}{2} = \frac{7}{2}$

Sym. axis: $y = 3$

opens right (focus right of directrix)

x-int (let $y = 0$) $17/2$

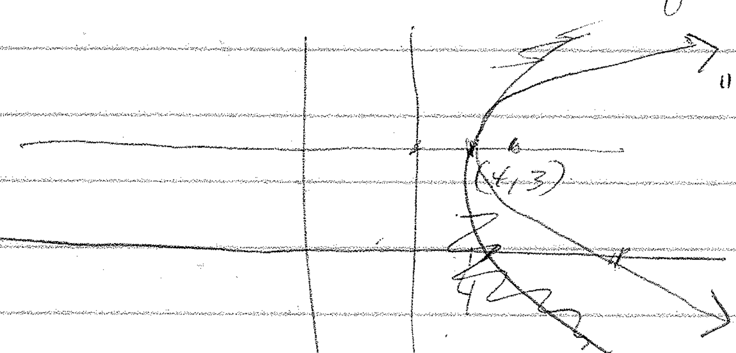
"roots" y-ints: (let $x = 0$)

$0 = \frac{1}{2}(y-3)^2 + 4$

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

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

no roots



#11 a) $x^2 + 18 = -6y$

$y = -\frac{1}{6}(x^2+18) = -\frac{1}{6}x^2 - 3$

$y = -\frac{1}{6}(x-0)^2 - 3$

vertex $(0, -3)$

$(h, k+p)$ focus $= (0, -3 + -3/2)$ $\qquad 4p = -6$

$= (0, -9/2)$ $\qquad p = -3/2$

directrix $y = k - p$

$y = -3 - -3/2 = -3/2$

#11b $y = -x^2 + 2x + 8$

$= -(x^2 - 2x \quad) + 8$

$= -(x^2 - 2x + 1) + 8 + 1$

$y = -(x-1)^2 + 9$ $\qquad (h,k) = (1,9)$

$4p = -1$

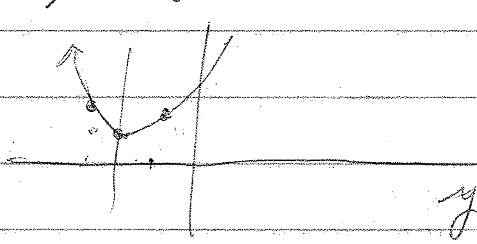
$p = -1/4$

Roots $x = 1 \pm 3$ $\qquad$ focus: $(h, k+p) = (1, 9 - \frac{1}{4}) = (1, \frac{35}{4})$

$x = 4$ + -2 $\qquad$ directrix: $y = k - p = 9 + \frac{1}{4} = 37/4$

#8, a) Given vertex $(-2,1)$ + a pt $(-3,2)$

$f(-3) = 2$ $\qquad f(-2) = 1 \to f(-1) = 2$



axis of sym: $x = -2$

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

Using pt $(-3,2)$: $2 = +\frac{1}{4p}(-3+2)^2 + 1$

$2 = +\frac{1}{4p} + 1 \to 4p = 1$

$\boxed{p = 1/4}$