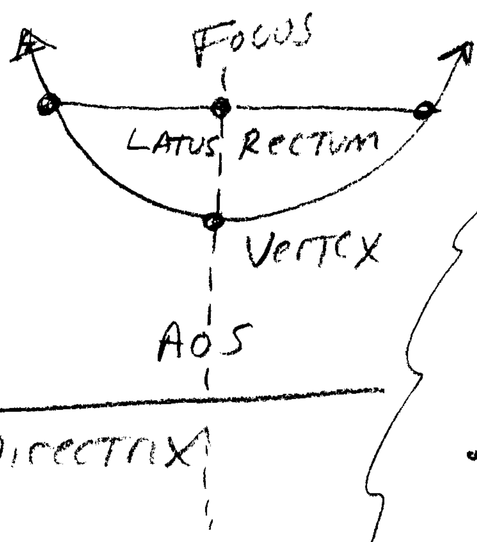
BE-Alg. 2 | Friday 2-26-10

Copy one more parabola property from Ch. 8-2 for notes:

Definition:

"latus rectum" ⇒ the line segment through the focus of a parabola and perpendicular to the axis of symmetry.



Latus Rectum

$\leftarrow \left|\frac{1}{a}\right| \rightarrow$

∴ the distance from the parabola to focus is $\left|\frac{1}{2}\cdot\frac{1}{a}\right| = \left|\frac{1}{2a}\right|$

Homework review.

Enjoy your break — Explore parabolas online!

Alg. 2 ~ Homework Review ~ Pg 423 #5, 7, 9.

5. $y = (x-3)^2 - 4$ $\boxed{V(3,-4)}$

$a=1 \quad h=3 \quad k=-4$

$F\left(3, -4 + \frac{1}{4(1)}\right)$

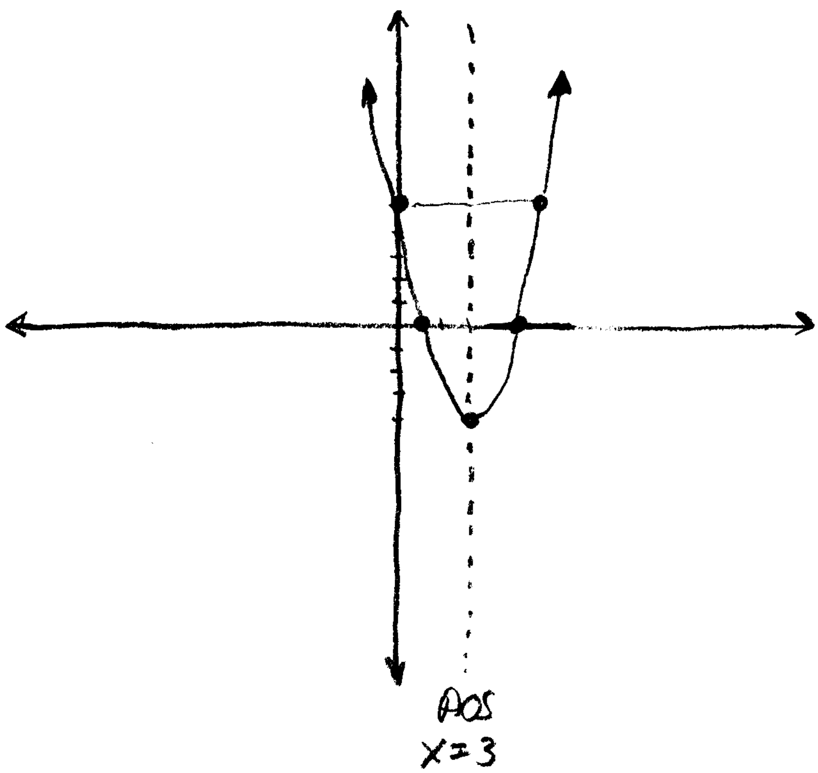
$\boxed{F\left(3, -3\frac{3}{4}\right)}$

$\boxed{AOS \Rightarrow x=3}$

Directrix $\Rightarrow$

$y = -4 - \frac{1}{4} \Rightarrow \boxed{y = -4\frac{1}{4}}$

$L.R. \Rightarrow \left|\frac{1}{a}\right| = \left|\frac{1}{1}\right| = \boxed{1 = L.R.}$



AOS
$x=3$

X	Y
0	5
1	0

7. $y = -3x^2 - 8x - 6$ $\rightarrow$ $\frac{8}{3} \cdot \frac{1}{2} = \frac{8}{6} = \frac{4}{3}$

$y = -3\left(x^2 + \frac{8}{3} + \left(\frac{4}{3}\right)^2\right) - 6 + \left(\cancel{3}^{1} \cdot \frac{16}{\cancel{9}_{3}}\right)$ Why A + ??

$y = -3\left[\left(x + \frac{4}{3}\right)^2\right] - \frac{18}{3} + \frac{16}{3}$

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

$a = -3$

$\boxed{V = \left(-\frac{4}{3}, -\frac{2}{3}\right)}$

$\boxed{AoS \Rightarrow x = -\frac{4}{3}}$

$F = \left(-\frac{4}{3}, K + \frac{1}{4a}\right)$

$= \left(-\frac{4}{3}, -\frac{2}{3} + \frac{1}{4(-3)}\right)$

$= \left(-\frac{4}{3}, \frac{-8}{12} - \frac{1}{12}\right)$

$F = \left(-\frac{4}{3}, \frac{-9}{12}\right) = \boxed{\left(-\frac{4}{3}, -\frac{3}{4}\right) = F}$

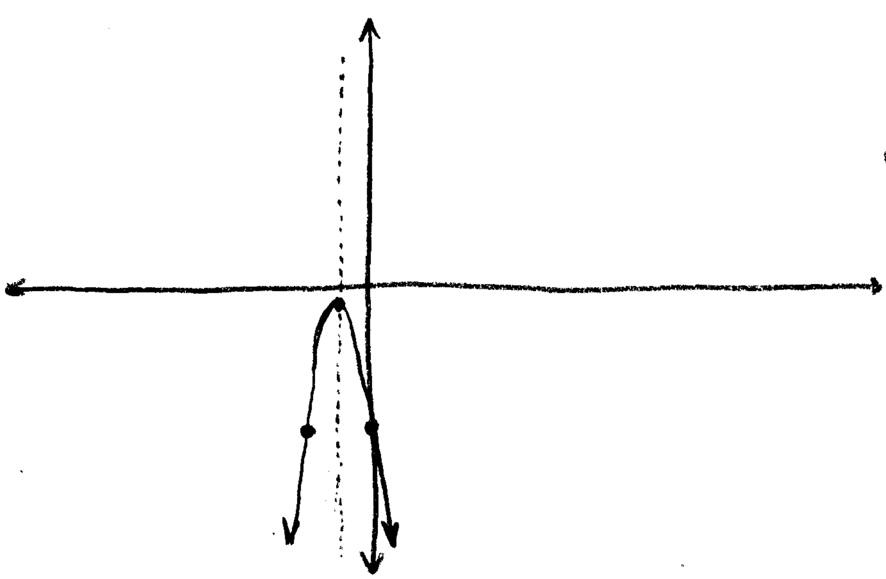
Directrix $\Rightarrow$

$y = K - \frac{1}{4a}$

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

$y = \frac{-8}{12} + \frac{1}{12} = \boxed{\frac{-7}{12} = y}$ Directrix.

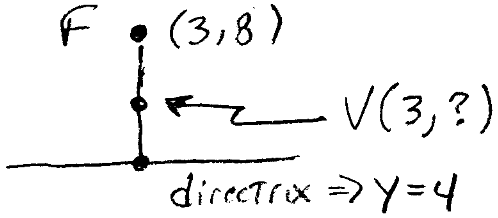
$\boxed{LR = \left|\frac{1}{-3}\right| = \frac{1}{3}}$



	X	Y
V	$-\frac{4}{3}$	$-\frac{2}{3}$
	$\frac{5}{3}$	$-27\frac{2}{3}$
	0	$-\frac{18}{3} = -6$
	1	$-\frac{51}{3} = -17$

(9.) Focus $(3, 8)$ directrix $y = 4$

$\boxed{AOS \Rightarrow X = 3}$ $\quad 8 = K + \frac{1}{4a} \quad 4 = K - \frac{1}{4a}$



The y coordinate of the vertex must be half-way between $Y=8$ and $Y=4$

$\therefore \boxed{\text{Vertex} = (3, 6)}$

$h \quad K$

Solve $8 = K + \frac{1}{4a}$ for a since $K = 6$

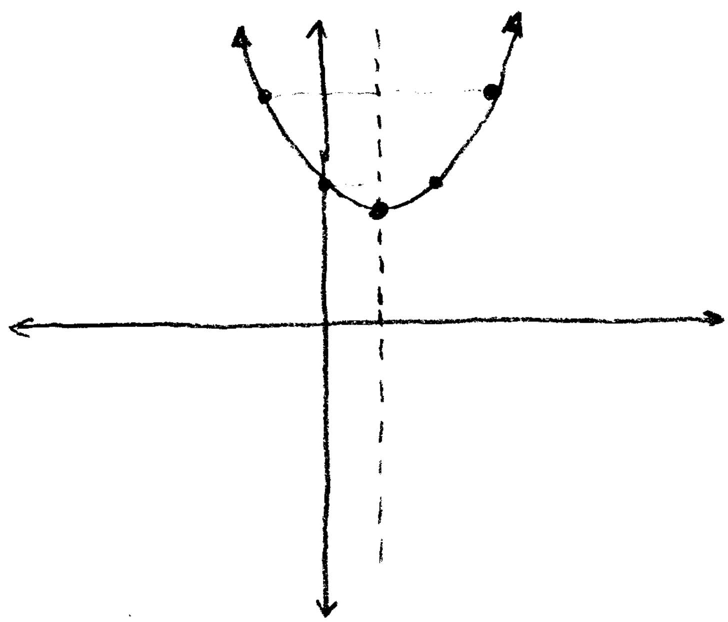
$$8 = 6 + \frac{1}{4a}$$

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

$$a \cdot 2 = \frac{1}{4a} \cdot a$$

$$a = \frac{\frac{1}{4}}{2} = \boxed{\frac{1}{8} = a} \quad \therefore \boxed{Y = \frac{1}{8}(X-3)^2 + 6}$$

*



X	Y
0	$\frac{9}{8} + 6$ $\frac{9}{8} + \frac{48}{8} = \frac{57}{8}$ $7\frac{1}{8}$
-3	$\frac{48}{8} + 6$ $6 + 6 = 12$