

Sec. 8.2 Graph and Write Equations of Parabolas

vertex: $(0,0)$

Equation:

$x^2 = 4py$
opens up/down

$y^2 = 4px$
opens rt/left

Focus
 $(0, p)$

Focus
 $(p, 0)$

Directrix
 $y = -p$

Directrix
 $x = -p$

AOS
Vertical
 $x = 0$

AOS
Horizontal
 $y = 0$

Graph. Identify the focus, directrix, and axis of symmetry.

a. $y^2 = 20x$

v: $(0,0)$

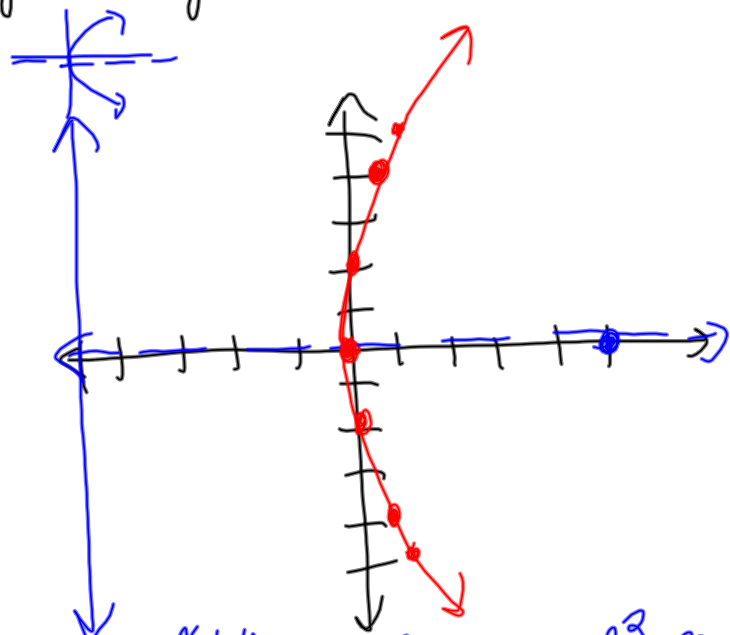
aos: $y = 0$

$\frac{4p}{4} = \frac{20}{4}$

$p = 5$

focus: $(5, 0)$

directrix: $x = -5$



x	y
0.8	4
0.2	2
1.25	5

$y^2 = 20x$ $2^2 = 20x$
 $4^2 = 20x$ $\frac{4}{20} = \frac{20x}{20}$
 $\frac{16}{20} = \frac{20x}{20}$ $\frac{1}{5} = x$
 $\frac{4}{5} = x$ $\frac{1}{5} = x$

b. $y^2 = -6x$
 v: (0,0)

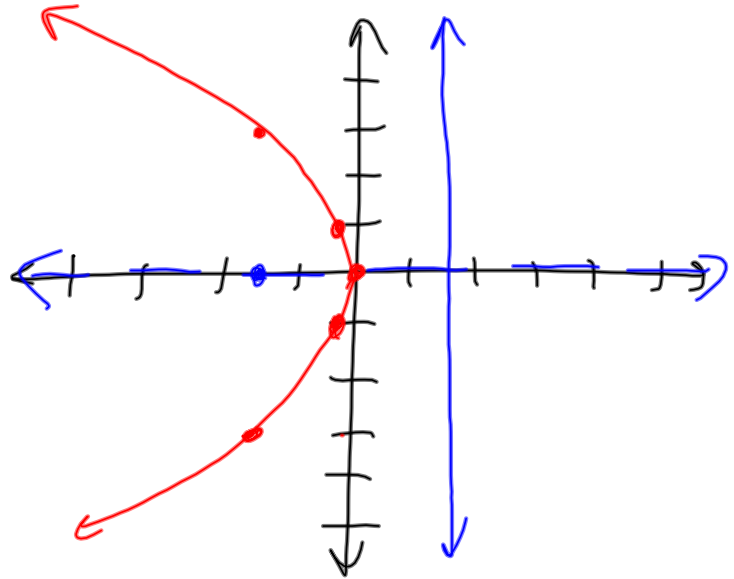
axis: $y=0$

$\frac{4p}{4} = -\frac{6}{4}$

$p = -\frac{3}{2}$

focus: $(-\frac{3}{2}, 0)$

directrix: $x = \frac{3}{2}$



x	y
$-\frac{1}{6}$	1
$-\frac{3}{2}$	3

$1^2 = -6x$
 $\frac{1}{-6} = \frac{-6x}{-6}$
 $-\frac{1}{6} = x$

$3^2 = -6x$
 $\frac{9}{-6} = \frac{-6x}{-6}$
 $-\frac{3}{2} = x$

c. $x^2 = 2y$

v: (0,0)

axis: $x=0$

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

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

focus: $(0, \frac{1}{2})$

directrix: $y = -\frac{1}{2}$

x	y
1	$\frac{1}{2}$
2	2

$1^2 = 2y$
 $\frac{1}{2} = \frac{2y}{2}$
 $\frac{1}{2} = y$

$2^2 = 2y$
 $\frac{4}{2} = \frac{2y}{2}$
 $2 = y$

p. 499

(3, 9, 15, 23)

