

Write the equation of the conic described. Write the final answer in standard form.

1. A circle with a center at $(-4,5)$ containing the point $(-2,-3)$.

$$(x-h)^2 + (y-k)^2 = r^2$$

$$(-2+4)^2 + (-3-5)^2 = r^2$$

$$4 + 64 = r^2$$

$$68 = r^2$$

$$(x+4)^2 + (y-5)^2 = 68$$

2. A circle with a center at $(1,-4)$ containing the point $(0,3)$.

$$(x-h)^2 + (y-k)^2 = r^2$$

$$(0-1)^2 + (3+4)^2 = r^2$$

$$1 + 49 = r^2$$

$$50 = r^2$$

$$(x-1)^2 + (y+4)^2 = 50$$

3. A circle with endpoints of the diameter of $(0,-6)$ and $(4,2)$.

midpoint $\frac{0+4}{2}, \frac{-6+2}{2}$

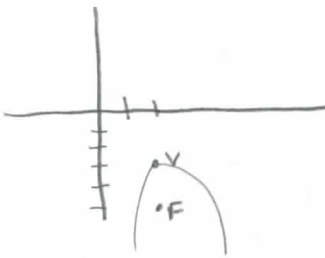
$$(2, -2)$$

$$(x-2)^2 + (y+2)^2 = 20$$

length $\sqrt{(0-4)^2 + (-6-2)^2} = \sqrt{16+64} = \sqrt{80} = 4\sqrt{5}$

radius = $2\sqrt{5}$

4. A parabola with a vertex at $(2,-3)$ and focus $(2,-5)$.

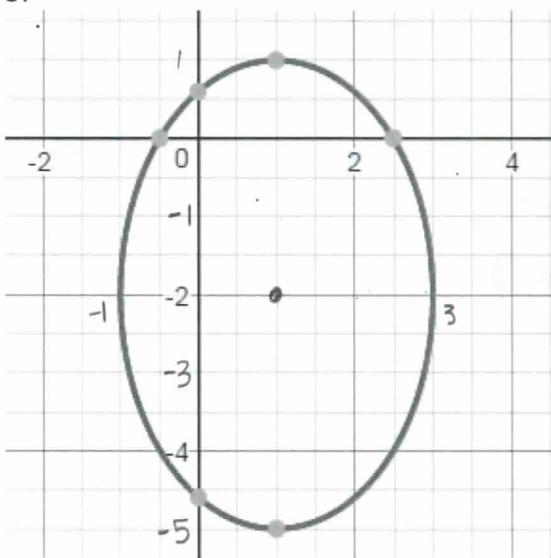


$$p = -2$$

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

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

- 5.



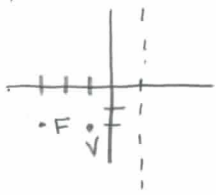
center $(1, -2)$

$$r_x = 2$$

$$r_y = 3$$

$$\frac{(x-1)^2}{4} + \frac{(y+2)^2}{9} = 1$$

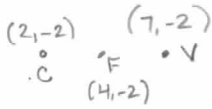
6. A parabola with a focus at $(-3, -2)$ and a directrix line $x=1$.



$V(-1, -2)$
 $P = -2$

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

7. An ellipse with a center at $(2, -2)$ vertex at $(7, -2)$ and focus at $(4, -2)$.



$r_v =$
 $r_x = 5$
 $r_f = 2$

$5^2 - (r_v)^2 = 2^2$
 $25 - (r_y)^2 = 4$

$$\frac{(x-2)^2}{25} + \frac{(y+2)^2}{21} = 1$$

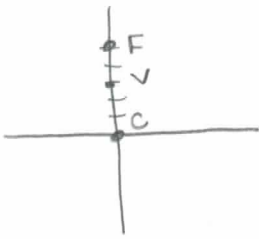
8. A hyperbola with vertices at $(0, 6)$ and $(0, -6)$ and asymptote of $y=2x$.



$r_y = 6$
 $r_x =$
 $\frac{r_y}{r_x} = 2$

$$\frac{y^2}{36} - \frac{x^2}{9} = 1$$

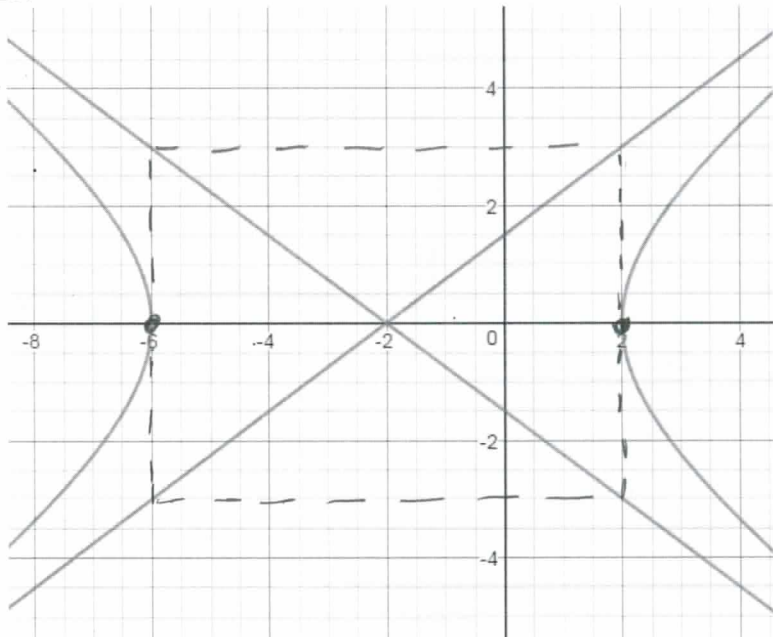
9. A hyperbola with a center at $(0, 0)$ a focus at $(0, 5)$ and a vertex at $(0, 3)$.



$$\frac{y^2}{9} - \frac{x^2}{16} = 1$$

$9 + (r_x)^2 = 25$

10.



$$\frac{(x+2)^2}{16} - \frac{y^2}{9} = 1$$

$r_x = 4$
 $r_y = 3$