

# Answer Key

## Acc. CCGPS Precalculus

## Conics Review

Name: \_\_\_\_\_

Find the standard form of the equation of the specified ellipse.

1. Center: (2, -1); Vertex (2, 1/2), Minor axis has length of 2

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

2. Vertices: (±5, 0) and eccentricity of  $\frac{3}{5} = \frac{c}{a}$

$$\frac{x^2}{25} + \frac{y^2}{16} = 1$$

$$c^2 = a^2 - b^2$$

$$9 = 25 - b^2$$

$$b^2 = 16$$

Find the center, vertices, foci, and eccentricity of the ellipse and sketch its graph.

3.  $9x^2 + 25y^2 - 36x - 50y + 61 = 225$

$$9x^2 - 36x + 25y^2 - 50y = 225 - 61$$

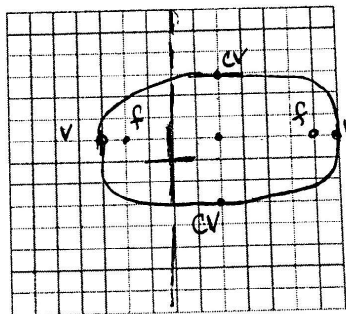
$$9(x^2 - 4x + 4) + 25(y^2 - 2y + 1) = 164$$

$$C_h = (-\frac{4}{2})^2 = (-2)^2 \quad C_v = (-\frac{2}{2})^2 = (-1)^2$$

$$9(x-2)^2 + 25(y-1)^2 = 225$$

$$\frac{(x-2)^2}{25} + \frac{(y-1)^2}{9} = 1$$

ctr: (2, 1)  
v: (9, 1), (-3, 1)  
f: (6, 1), (0, 1)  
ecc =  $\frac{4}{5}$



$$c^2 = a^2 - b^2$$

$$25 - 9$$

$$c^2 = 16$$

$$c = 4$$

Find the standard form of the equation of the specified hyperbola.

4. Vertices: (1, ±2); Passes through the point (0, √5)

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

5. Vertices: (3, 0) & (3, 4);

Asymptotes:  $y = \frac{2}{3}x$  AND  $y = 4 - \frac{2}{3}x$

$$m = \frac{a}{b} = \frac{2}{3}$$

Find the center, vertices, foci, and equations of the asymptotes of the hyperbola and sketch its graph.

6.  $16y^2 - x^2 + 2x + 64y + 63 = 16$

$$16y^2 + 64y - x^2 + 2x = 16 - 63$$

$$16(y^2 + 4y + 4) - 1(x^2 - 2x + 1) = -47$$

$$C_h = (\frac{4}{2})^2 = (2)^2 \quad C_v = (-\frac{2}{2})^2 = (-1)^2$$

$$16(y+2)^2 - 1(x-1)^2 = 16$$

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

ctr: (1, -2)  
v: (1, -1), (1, -3)  
f: (1, -2 + √17), (1, -2 - √17)

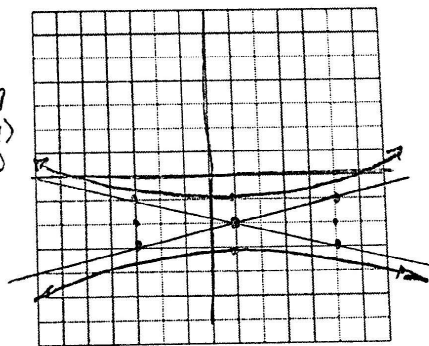
$$y+2 = \frac{1}{4}(x-1)$$

$$y = \frac{1}{4}x - \frac{9}{4}$$

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

$$y = -\frac{1}{4}x + \frac{9}{4}$$

$$c^2 = a^2 + b^2 = 1 + 16 = 17$$



5.  $a^2 = 4$

ctr: (1, 0)  
vert: (1, 2), (1, -2)

$b^2 - a^2 = 2a$

$$\frac{(b^2 - a^2)}{b^2} = \frac{(0-1)^2}{b^2} = 1$$

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

$$\frac{1}{b^2} = \frac{1}{4}$$

$$b^2 = 4$$

Answer Key