

Unit 6 Practice Test

Complete the problems below, show your work, and write your answer in the blank provided.

Target 6.1

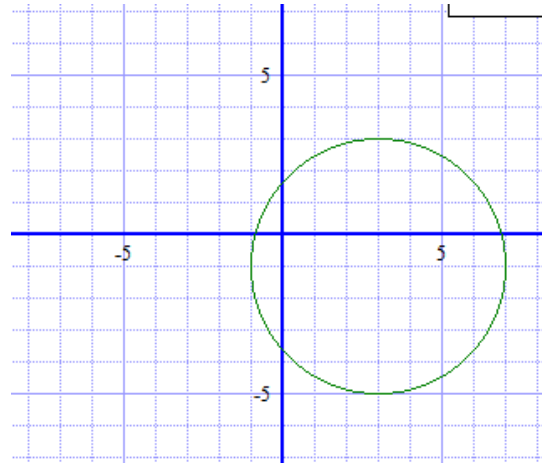
I can write the equation for and graph circles, ellipses, and hyperbolas.

1. a. Graph this circle and state the coordinates of the center and the radius.

$$(x - 3)^2 + (y + 1)^2 = 16$$

Center: (3, -1)

Radius: $\sqrt{16} = 4$

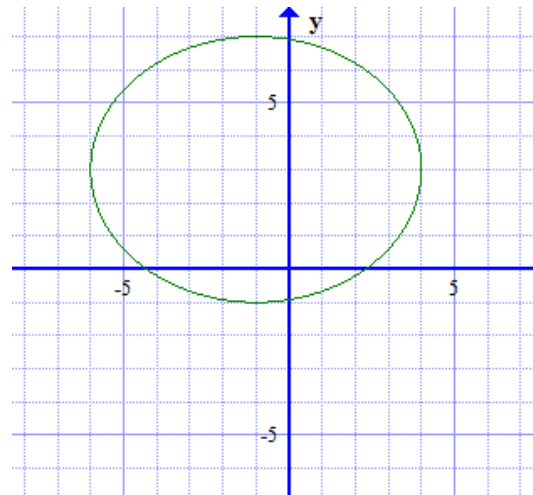


- b. Graph this ellipse. State the coordinates of the center, the values of a , b , and c .

$$\frac{(x+1)^2}{25} + \frac{(y-3)^2}{16} = 1$$

Center: (-1, 3)

$a = 5, b = 4, c = 3$



2. Write the equations in standard form and identify the type of conic it is.

$$x^2 + y^2 + 6x - 8y + 20 = 0$$

$$x^2 + 6x + y^2 - 8y = -20$$

$$(x^2 + 6x + 9) + (y^2 - 8y + 16) = -20 + 9 + 16$$

$$(x + 3)^2 + (y - 4)^2 = 5$$

This is a Circle!

$$x^2 + 8y^2 + 6x - 7 = 0$$

$$x^2 + 6x + 8y^2 = 7$$

$$(x^2 + 6x + 9) + 8y^2 = 16$$

$$(x + 3)^2 + 8y^2 = 16$$

$$(x + 3)^2 + 8y^2 = 16$$

$$\frac{(x + 3)^2}{16} + \frac{8y^2}{16} = \frac{16}{16}$$

$$\frac{(x + 3)^2}{16} + \frac{y^2}{2} = 1$$

This is an Ellipse!

3. Write the equation for the ellipse graphed at the right.
Calculate its focal distance.

$$\text{Center: } (3, -2)$$

$$a = 4$$

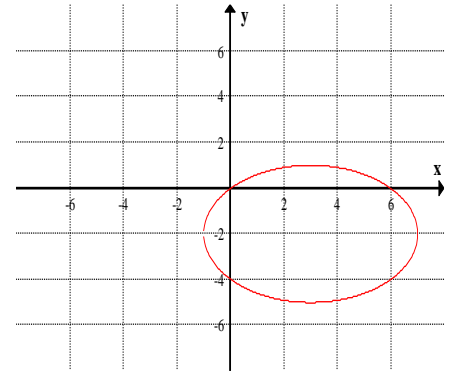
$$b = 3$$

$$a^2 = b^2 + c^2$$

$$4^2 = 3^2 + c^2$$

$$\text{Focal Distance: } c = \sqrt{7}$$

$$\text{Equation: } \frac{(x - 3)^2}{16} + \frac{(y + 2)^2}{9} = 1$$



Application

4. The orbit of Halley's comet is 36.18 AU long and 9.12 AU wide. What is its eccentricity?

$$a = \frac{36.18}{2} = 18.9$$

$$b = \frac{9.12}{2} = 4.56$$

$$c = \sqrt{a^2 - b^2} = 18.34$$

$$\text{Eccentricity: } e = \frac{c}{a} = \frac{18.34}{18.9} = .97$$