

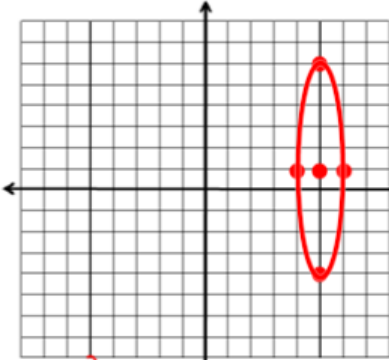
# 11.4 Practice – Ellipses

Name: Solutions

Period: \_\_\_\_\_

In problems 1-4, Sketch the graph of the given equation and fill in the blanks for the given information.

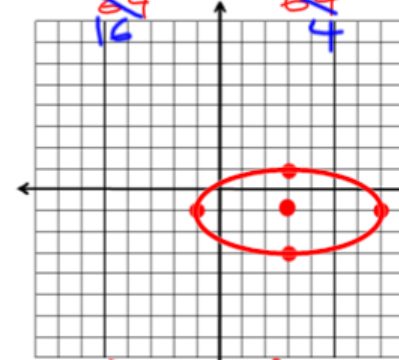
1.  $(x - 5)^2 + \frac{(y-1)^2}{25} = 1$



Center:  $(5, 1)$   
 Vertices:  $(5, 6)$   $(5, -4)$   
 Co-vertices:  $(4, 1)$   $(6, 1)$   
 Foci:  $(5, 1 \pm 2\sqrt{6})$

$a^2 = 25$   $c^2 = 25 - 1$   
 $b^2 = 1$   $c = \sqrt{24}$   
 $c = 2\sqrt{6}$

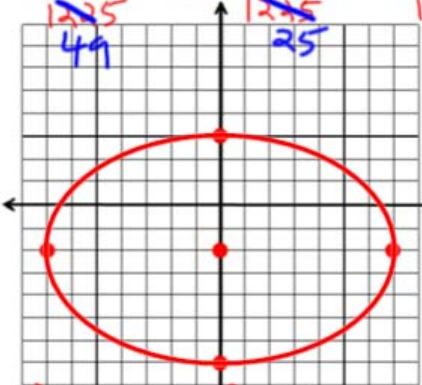
2.  $\frac{4(x - 3)^2}{16} + \frac{16(y + 1)^2}{64} = 1$



Center:  $(3, -1)$   
 Vertices:  $(-1, -1)$   $(7, -1)$   
 Co-vertices:  $(3, -3)$   $(3, 1)$   
 Foci:  $(3 \pm 2\sqrt{3}, -1)$

$a^2 = 16$   $c^2 = 16 - 4$   
 $b^2 = 4$   $c = \sqrt{12}$   
 $c = 2\sqrt{3}$

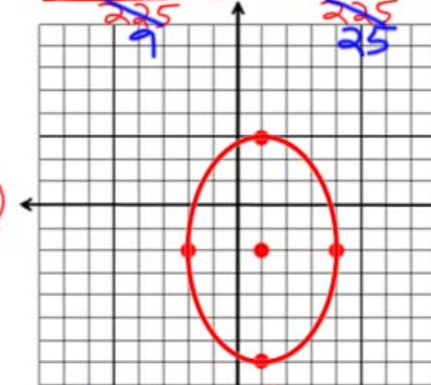
3.  $\frac{25x^2}{49} + \frac{49(y + 2)^2}{25} = 1$



Center:  $(0, -2)$   
 Vertices:  $(-7, -2)$   $(7, -2)$   
 Co-vertices:  $(0, -7)$   $(0, 3)$   
 Foci:  $(\pm 2\sqrt{6}, -2)$

$a^2 = 49$   $c^2 = 49 - 25$   
 $b^2 = 25$   $c = \sqrt{24}$   
 $c = 2\sqrt{6}$

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




Center:  $(1, -2)$   
 Vertices:  $(1, -7)$   $(1, 3)$   
 Co-vertices:  $(-2, -2)$   $(4, -2)$   
 Foci:  $(1, -6)$   $(1, 2)$

$a^2 = 25$   $c^2 = 25 - 9$   
 $b^2 = 9$   $c = 4$

Use the information provided to write the standard form equation of each ellipse.

- 5) Vertices: (8, 10), (-16, 10)  
Co-vertices: (-4, 17), (-4, 3)

Center: (-4, 10)

  $a=12$     $b=7$   
 $a^2=144$     $b^2=49$

$$\frac{(x+4)^2}{144} + \frac{(y-10)^2}{49} = 1$$

- 6) Vertices: (-9, 18), (-9, 0)  
Co-vertices: (-1, 9), (-17, 9)

Center: (-9, 9)


$a=9$     $b=8$   
 $a^2=81$     $b^2=64$

$$\frac{(x+9)^2}{64} + \frac{(y-9)^2}{81} = 1$$



- 7) Vertices: (-7, 4), (-7, -8)  
Co-vertices: (-2, -2), (-12, -2)

Center: (-7, -2)

  $a=6$     $b=5$   
 $a^2=36$     $b^2=25$

$$\frac{(x+7)^2}{25} + \frac{(y+2)^2}{36} = 1$$

- 8) Vertices: (11, -8), (-11, -8)  
Co-vertices: (0, -2), (0, -14)

Center: (0, -8)

$a=11$     $b=6$   
 $a^2=121$     $b^2=36$

$$\frac{x^2}{121} + \frac{(y+8)^2}{36} = 1$$



- 9) Vertices: (2, 7), (-8, 7)  
Foci: (1, 7), (-7, 7)

Center: (-3, 7)

$a=5$     $c=4$   
 $a^2=25$     $c^2=16$   
 $16=25-b^2$   
 $b^2=9$

$$\frac{(x+3)^2}{25} + \frac{(y-7)^2}{9} = 1$$



- 10) Vertices: (-6, 23), (-6, -3)  
Foci: (-6, 22), (-6, -2)

Center: (-6, 10)

$a=13$     $c=12$   
 $a^2=169$     $c^2=144$   
 $144=169-b^2$   
 $b^2=25$

$$\frac{(x+6)^2}{25} + \frac{(y-10)^2}{169} = 1$$

