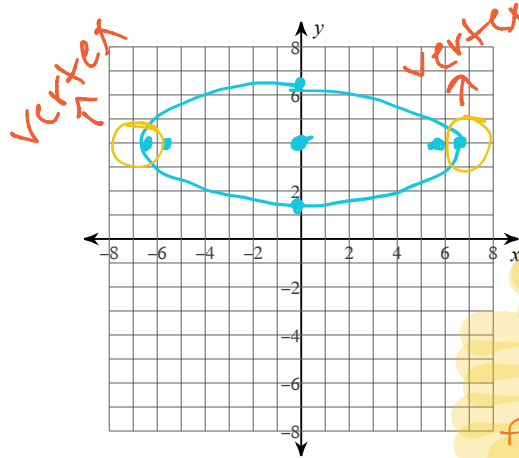


# Practice with Ellipses

Name \_\_\_\_\_

Identify the center, vertices, and foci of each. Then sketch the graph.

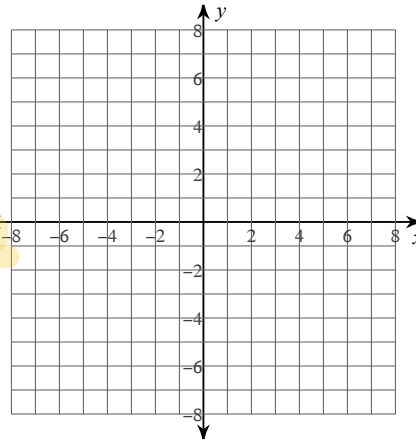
1)  $\frac{x^2}{40} + \frac{(y-4)^2}{5} = 1$



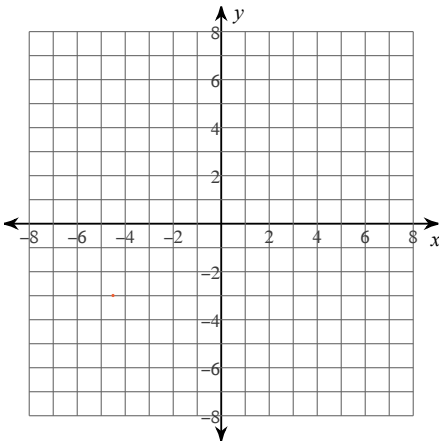
$a^2 = 40$   
 $a = \sqrt{40} = 2\sqrt{10}$   
 $b = \sqrt{5}$   
 $c^2 = a^2 - b^2$   
 $c^2 = 40 - 5$   
 $c = \sqrt{35}$

center =  $(0, 4)$   
 vertices =  $(2\sqrt{10}, 4)$  and  $(-2\sqrt{10}, 4)$   
 foci =  $(\sqrt{35}, 4)$  and  $(-\sqrt{35}, 4)$

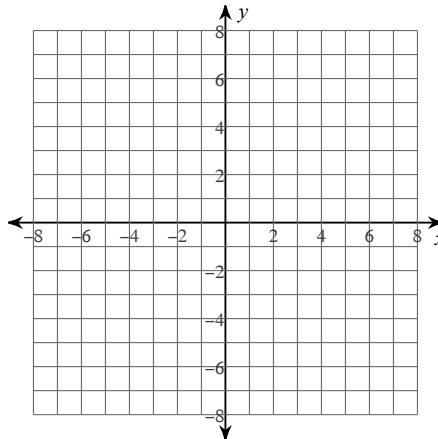
2)  $\frac{(x-1)^2}{9} + \frac{y^2}{49} = 1$



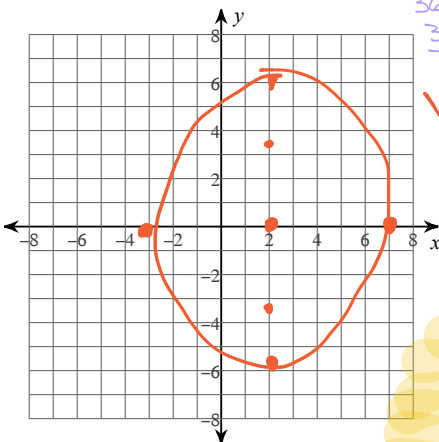
3)  $\frac{x^2}{25} + \frac{(y-7)^2}{9} = 1$



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



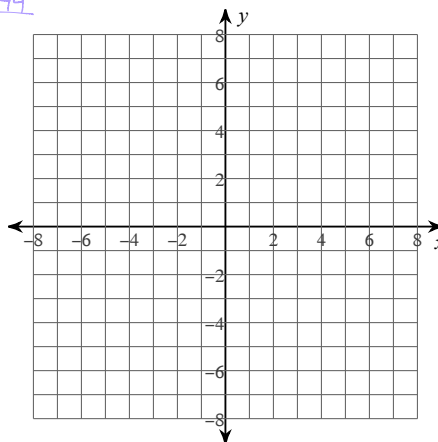
5)  $36x^2 + 25y^2 - 144x - 756 = 0$



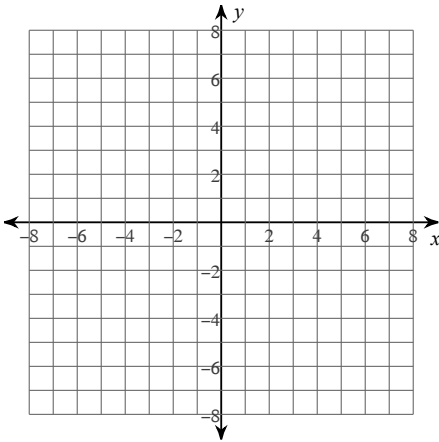
$36x^2 - 144x + 25y^2 = 756$   
 $36(x^2 - 4x + 4) + 25y^2 = 756 + 144$   
 $36(x-2)^2 + 25y^2 = 900$   
 $\frac{(x-2)^2}{25} + \frac{y^2}{36} = 1$   
 $c^2 = a^2 - b^2$   
 $c^2 = 36 - 25$   
 $c^2 = 11$   
 $c = \sqrt{11}$

center:  $(2, 0)$   
 vertices:  $(2, 6)$  and  $(2, -6)$   
 foci:  $(2, \sqrt{11})$  and  $(2, -\sqrt{11})$

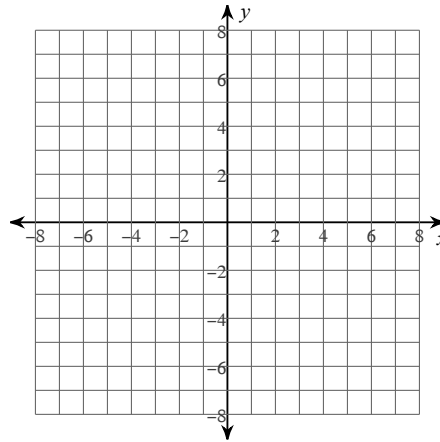
6)  $9x^2 + 16y^2 - 54x + 64y + 1 = 0$



7)  $4x^2 + 49y^2 - 294y + 245 = 0$



8)  $x^2 + 25y^2 + 100y + 75 = 0$



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

9) Vertices:  $(8 + 6\sqrt{5}, -3), (8 - 6\sqrt{5}, -3)$   
 Foci:  $(8 + 3\sqrt{5}, -3), (8 - 3\sqrt{5}, -3)$

10) Vertices:  $(1, -9), (-21, -9)$   
 Foci:  $(-10 + 2\sqrt{10}, -9), (-10 - 2\sqrt{10}, -9)$

11) Vertices:  $(10, 3), (10, -23)$   
 Foci:  $(10, -10 + 4\sqrt{3}), (10, -10 - 4\sqrt{3})$

12) Vertices:  $(-8 + \sqrt{170}, 8), (-8 - \sqrt{170}, 8)$   
 Foci:  $(-8 + \sqrt{145}, 8), (-8 - \sqrt{145}, 8)$