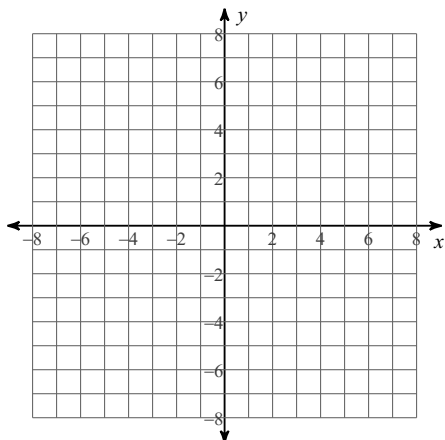


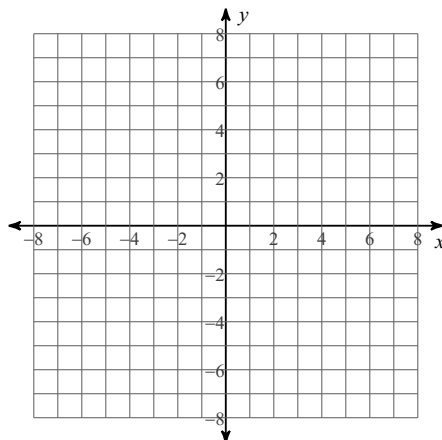
Graphing and Properties of Ellipses

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

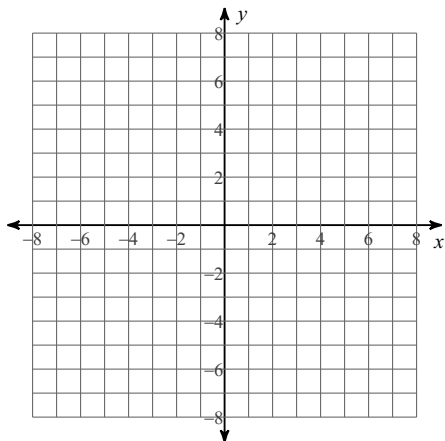
$$1) \frac{(x+3)^2}{9} + \frac{(y-3)^2}{4} = 1$$



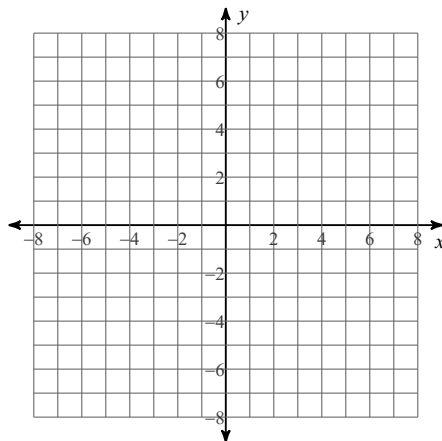
$$2) \frac{(x+2)^2}{25} + \frac{(y-1)^2}{36} = 1$$



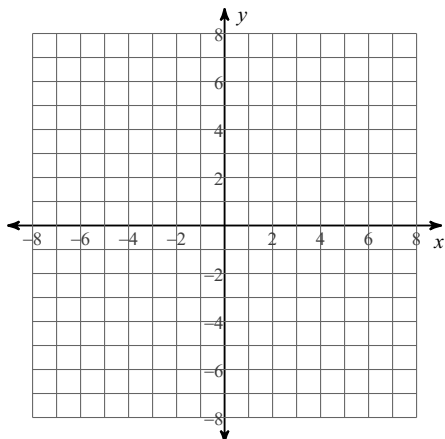
$$3) \frac{(x-4)^2}{4} + \frac{(y+1)^2}{36} = 1$$



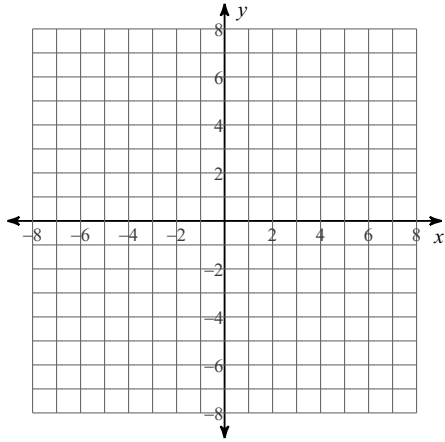
$$4) \frac{(x+2)^2}{25} + \frac{(y+1)^2}{9} = 1$$



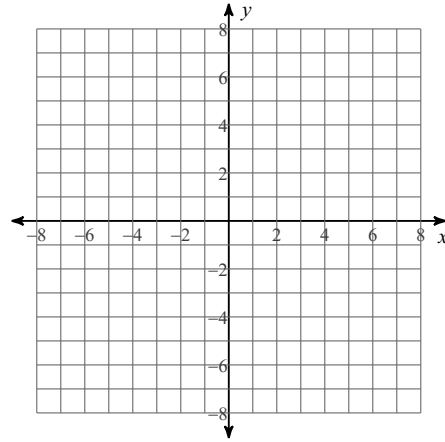
$$5) \frac{x^2}{49} + \frac{(y-2)^2}{25} = 1$$



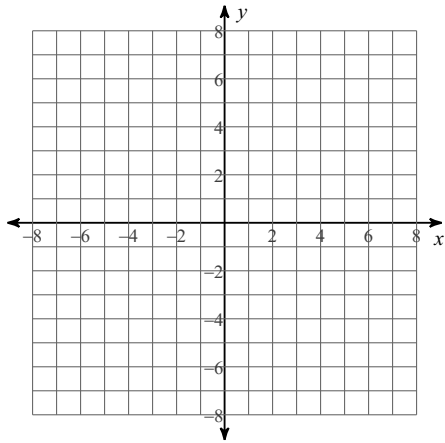
$$6) \frac{(x+1)^2}{16} + \frac{y^2}{49} = 1$$



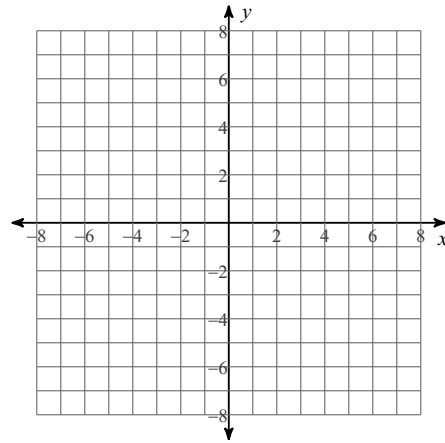
$$7) \frac{(x-1)^2}{36} + \frac{(y+3)^2}{4} = 1$$



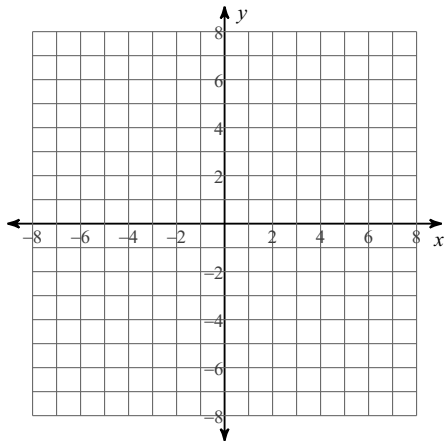
$$8) \frac{(x-1)^2}{36} + \frac{(y-3)^2}{16} = 1$$



$$9) \frac{(x-5)^2}{4} + \frac{(y-1)^2}{9} = 1$$



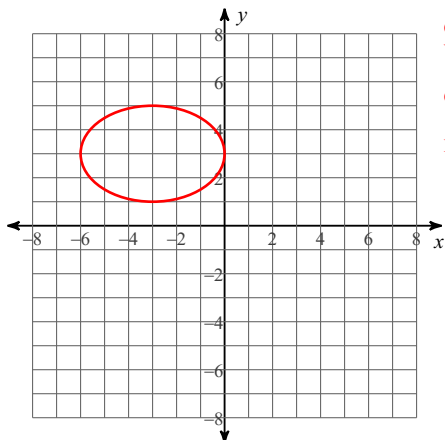
$$10) \frac{(x+2)^2}{16} + \frac{(y+1)^2}{36} = 1$$



Graphing and Properties of Ellipses

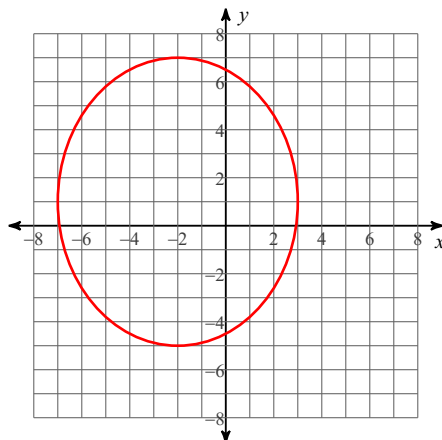
Identify the center, vertices, co-vertices, and foci of each. Then sketch the graph.

1) $\frac{(x+3)^2}{9} + \frac{(y-3)^2}{4} = 1$



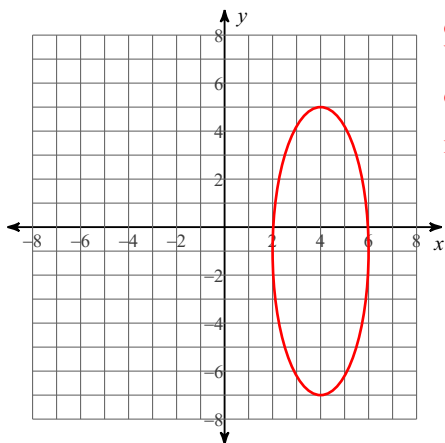
Center: $(-3, 3)$
 Vertices: $(0, 3)$
 $(-6, 3)$
 Co-vertices: $(-3, 5)$
 $(-3, 1)$
 Foci: $(-3 + \sqrt{5}, 3)$
 $(-3 - \sqrt{5}, 3)$

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



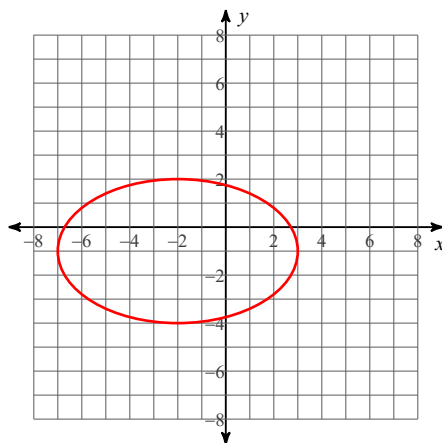
Center: $(-2, 1)$
 Vertices: $(-2, 7)$
 $(-2, -5)$
 Co-vertices: $(3, 1)$
 $(-7, 1)$
 Foci: $(-2, 1 + \sqrt{11})$
 $(-2, 1 - \sqrt{11})$

3) $\frac{(x-4)^2}{4} + \frac{(y+1)^2}{36} = 1$



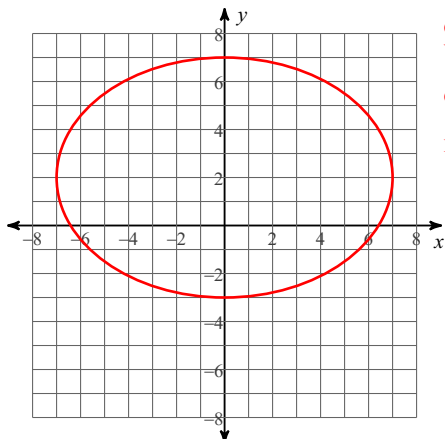
Center: $(4, -1)$
 Vertices: $(4, 5)$
 $(4, -7)$
 Co-vertices: $(6, -1)$
 $(2, -1)$
 Foci: $(4, -1 + 4\sqrt{2})$
 $(4, -1 - 4\sqrt{2})$

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



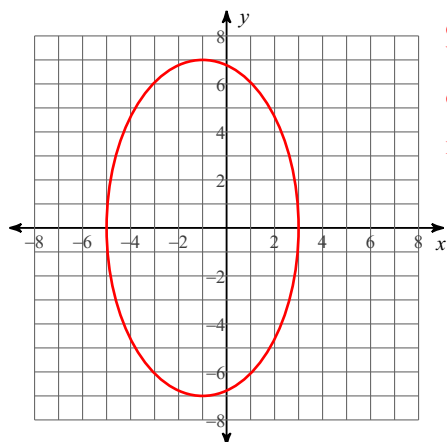
Center: $(-2, -1)$
 Vertices: $(3, -1)$
 $(-7, -1)$
 Co-vertices: $(-2, 2)$
 $(-2, -4)$
 Foci: $(2, -1)$
 $(-6, -1)$

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



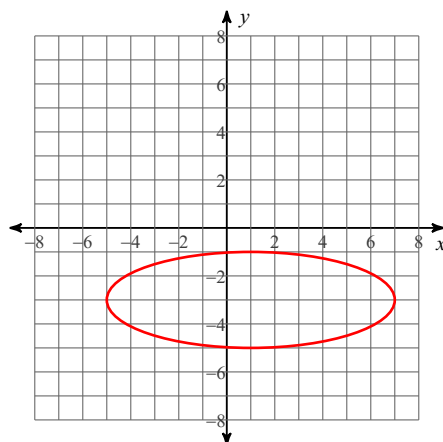
Center: $(0, 2)$
 Vertices: $(7, 2)$
 $(-7, 2)$
 Co-vertices: $(0, 7)$
 $(0, -3)$
 Foci: $(2\sqrt{6}, 2)$
 $(-2\sqrt{6}, 2)$

$$6) \frac{(x+1)^2}{16} + \frac{y^2}{49} = 1$$



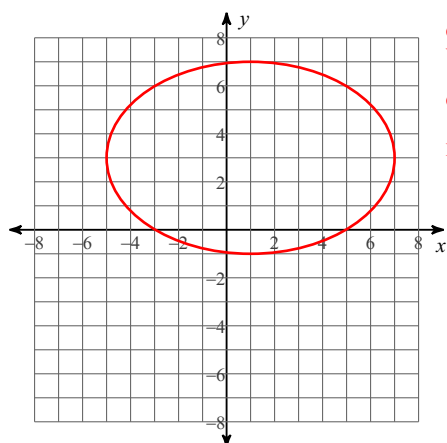
Center: $(-1, 0)$
 Vertices: $(-1, 7)$
 $(-1, -7)$
 Co-vertices: $(3, 0)$
 $(-5, 0)$
 Foci: $(-1, \sqrt{33})$
 $(-1, -\sqrt{33})$

$$7) \frac{(x-1)^2}{36} + \frac{(y+3)^2}{4} = 1$$



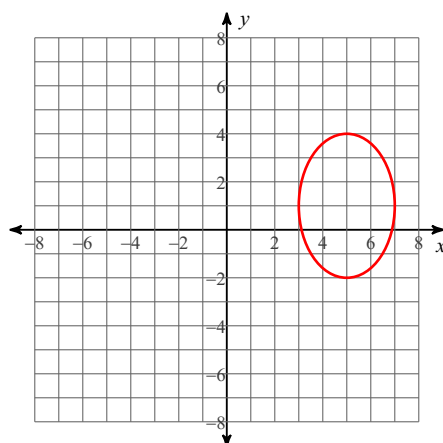
Center: $(1, -3)$
 Vertices: $(7, -3)$
 $(-5, -3)$
 Co-vertices: $(1, -1)$
 $(1, -5)$
 Foci: $(1 + 4\sqrt{2}, -3)$
 $(1 - 4\sqrt{2}, -3)$

$$8) \frac{(x-1)^2}{36} + \frac{(y-3)^2}{16} = 1$$



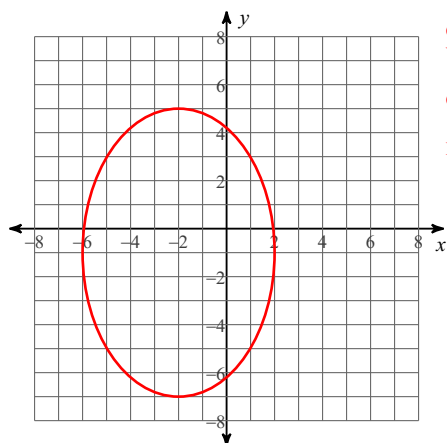
Center: $(1, 3)$
 Vertices: $(7, 3)$
 $(-5, 3)$
 Co-vertices: $(1, 7)$
 $(1, -1)$
 Foci: $(1 + 2\sqrt{5}, 3)$
 $(1 - 2\sqrt{5}, 3)$

$$9) \frac{(x-5)^2}{4} + \frac{(y-1)^2}{9} = 1$$



Center: $(5, 1)$
 Vertices: $(5, 4)$
 $(5, -2)$
 Co-vertices: $(7, 1)$
 $(3, 1)$
 Foci: $(5, 1 + \sqrt{5})$
 $(5, 1 - \sqrt{5})$

$$10) \frac{(x+2)^2}{16} + \frac{(y+1)^2}{36} = 1$$



Center: $(-2, -1)$
 Vertices: $(-2, 5)$
 $(-2, -7)$
 Co-vertices: $(2, -1)$
 $(-6, -1)$
 Foci: $(-2, -1 + 2\sqrt{5})$
 $(-2, -1 - 2\sqrt{5})$