

Assignment- Ellipse

Identify the center, vertices, co-vertices, foci, length of the major axis, length of the minor axis, length of the latus rectum, and eccentricity of each. Then sketch the graph.

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

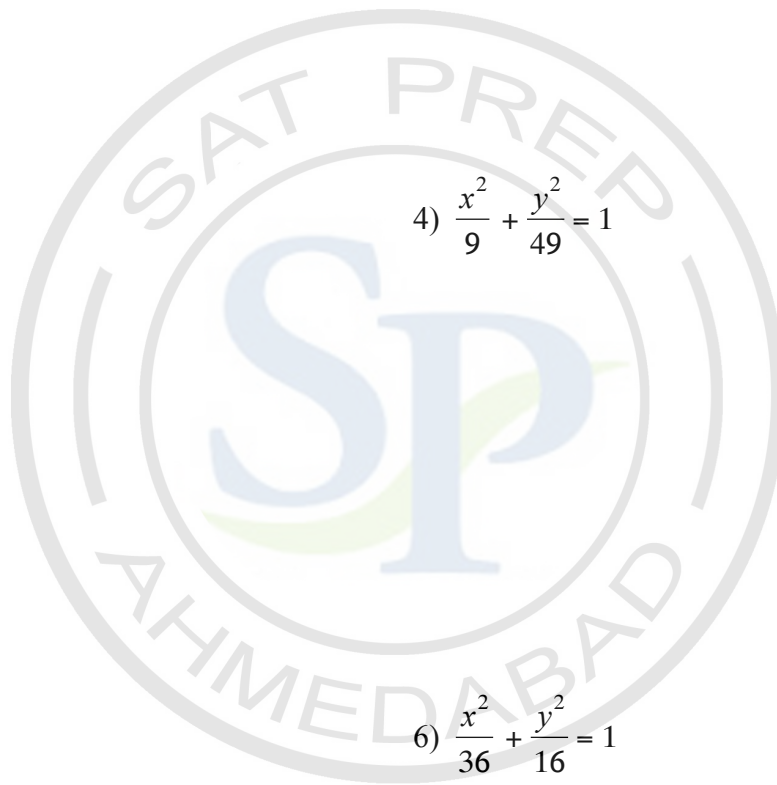
2) $\frac{x^2}{9} + \frac{y^2}{4} = 1$

3) $\frac{x^2}{45} + \frac{y^2}{20} = 1$

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

5) $\frac{x^2}{36} + \frac{y^2}{49} = 1$

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



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

$$8) 4x^2 + y^2 - 20 = 0$$

$$9) x^2 + 9y^2 - 9 = 0$$

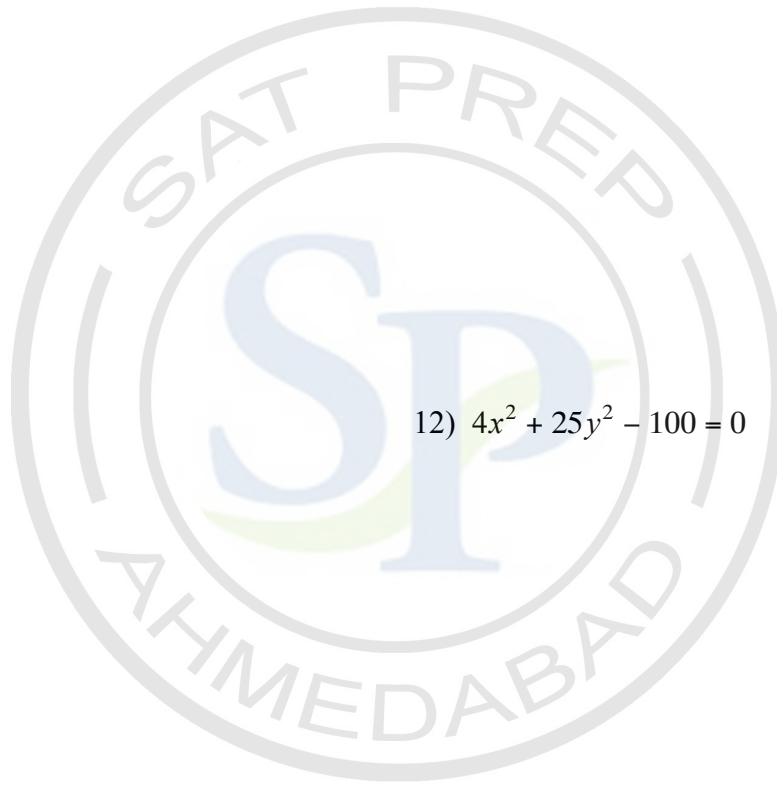
$$10) x^2 + 4y^2 - 40 = 0$$

$$11) x^2 + 4y^2 - 16 = 0$$

$$12) 4x^2 + 25y^2 - 100 = 0$$

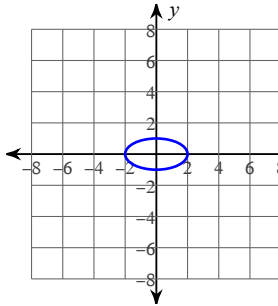
$$13) 4x^2 + y^2 - 16 = 0$$

$$14) 4x^2 + 49y^2 - 196 = 0$$



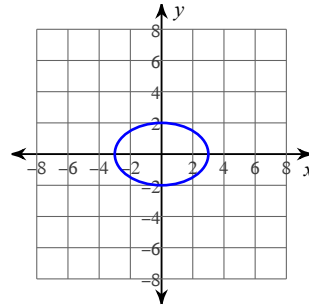
Answers to Assignment- Ellipse

1)



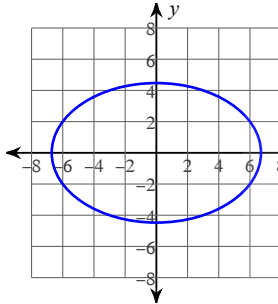
Center: $(0, 0)$
 Vertices: $(2, 0)$
 $(-2, 0)$
 Co-vertices: $(0, 1)$
 $(0, -1)$
 Foci: $(\sqrt{3}, 0)$
 $(-\sqrt{3}, 0)$
 Major Axis: 4 units
 Minor Axis: 2 units
 Latus Rectum: 1 unit
 Eccentricity: $\frac{\sqrt{3}}{2} \approx 0.866$

2)



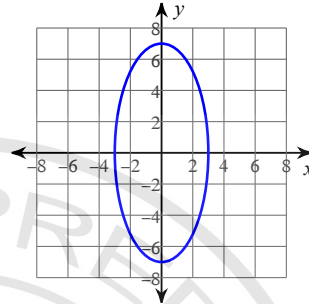
Center: $(0, 0)$
 Vertices: $(3, 0)$
 $(-3, 0)$
 Co-vertices: $(0, 2)$
 $(0, -2)$
 Foci: $(\sqrt{5}, 0)$
 $(-\sqrt{5}, 0)$
 Major Axis: 6 units
 Minor Axis: 4 units
 Latus Rectum: $\frac{8}{3}$ units
 Eccentricity: $\frac{\sqrt{5}}{3} \approx 0.745$

3)



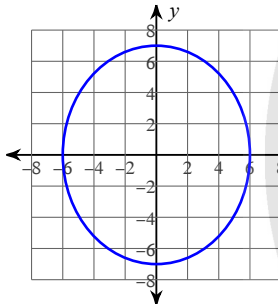
Center: $(0, 0)$
 Vertices: $(3\sqrt{5}, 0)$
 $(-3\sqrt{5}, 0)$
 Co-vertices: $(0, 2\sqrt{5})$
 $(0, -2\sqrt{5})$
 Foci: $(5, 0)$
 $(-5, 0)$
 Major Axis: $6\sqrt{5}$ units
 Minor Axis: $4\sqrt{5}$ units
 Latus Rectum: $\frac{8\sqrt{5}}{3}$ units
 Eccentricity: $\frac{\sqrt{5}}{3} \approx 0.745$

4)



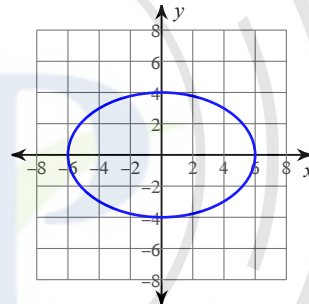
Center: $(0, 0)$
 Vertices: $(0, 7)$
 $(0, -7)$
 Co-vertices: $(3, 0)$
 $(-3, 0)$
 Foci: $(0, 2\sqrt{10})$
 $(0, -2\sqrt{10})$
 Major Axis: 14 units
 Minor Axis: 6 units
 Latus Rectum: $\frac{18}{7}$ units
 Eccentricity: $\frac{2\sqrt{10}}{7} \approx 0.904$

5)



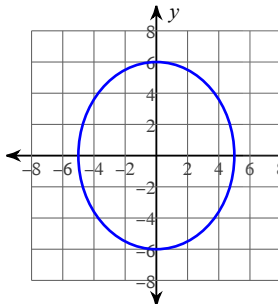
Center: $(0, 0)$
 Vertices: $(0, 7)$
 $(0, -7)$
 Co-vertices: $(6, 0)$
 $(-6, 0)$
 Foci: $(0, \sqrt{13})$
 $(0, -\sqrt{13})$
 Major Axis: 14 units
 Minor Axis: 12 units
 Latus Rectum: $\frac{72}{7}$ units
 Eccentricity: $\frac{\sqrt{13}}{7} \approx 0.515$

6)



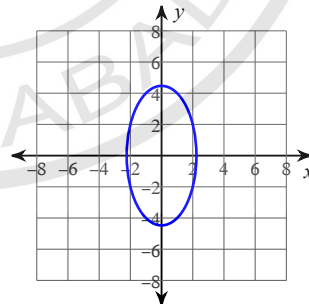
Center: $(0, 0)$
 Vertices: $(6, 0)$
 $(-6, 0)$
 Co-vertices: $(0, 4)$
 $(0, -4)$
 Foci: $(2\sqrt{5}, 0)$
 $(-2\sqrt{5}, 0)$
 Major Axis: 12 units
 Minor Axis: 8 units
 Latus Rectum: $\frac{16}{3}$ units
 Eccentricity: $\frac{\sqrt{5}}{3} \approx 0.745$

7)



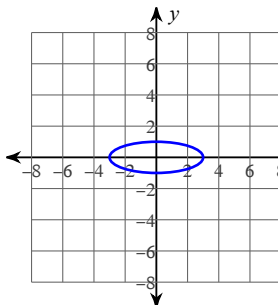
Center: $(0, 0)$
 Vertices: $(0, 6)$
 $(0, -6)$
 Co-vertices: $(5, 0)$
 $(-5, 0)$
 Foci: $(0, \sqrt{11})$
 $(0, -\sqrt{11})$
 Major Axis: 12 units
 Minor Axis: 10 units
 Latus Rectum: $\frac{25}{3}$ units
 Eccentricity: $\frac{\sqrt{11}}{6} \approx 0.553$

8)



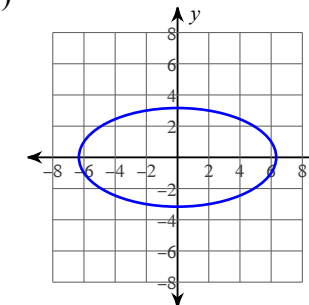
Center: $(0, 0)$
 Vertices: $(0, 2\sqrt{5})$
 $(0, -2\sqrt{5})$
 Co-vertices: $(\sqrt{5}, 0)$
 $(-\sqrt{5}, 0)$
 Foci: $(0, \sqrt{15})$
 $(0, -\sqrt{15})$
 Major Axis: $4\sqrt{5}$ units
 Minor Axis: $2\sqrt{5}$ units
 Latus Rectum: $\sqrt{5}$ units
 Eccentricity: $\frac{\sqrt{3}}{2} \approx 0.866$

9)



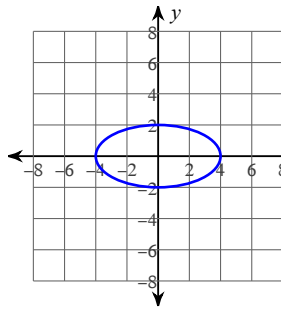
Center: $(0, 0)$
 Vertices: $(3, 0)$
 $(-3, 0)$
 Co-vertices: $(0, 1)$
 $(0, -1)$
 Foci: $(2\sqrt{2}, 0)$
 $(-2\sqrt{2}, 0)$
 Major Axis: 6 units
 Minor Axis: 2 units
 Latus Rectum: $\frac{2}{3}$ units
 Eccentricity: $\frac{2\sqrt{2}}{3} \approx 0.943$

10)



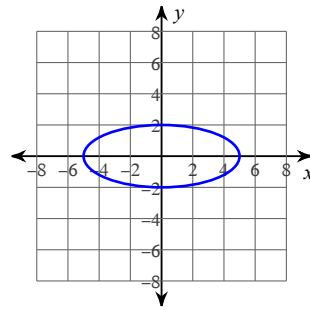
Center: $(0, 0)$
 Vertices: $(2\sqrt{10}, 0)$
 $(-2\sqrt{10}, 0)$
 Co-vertices: $(0, \sqrt{10})$
 $(0, -\sqrt{10})$
 Foci: $(\sqrt{30}, 0)$
 $(-\sqrt{30}, 0)$
 Major Axis: $4\sqrt{10}$ units
 Minor Axis: $2\sqrt{10}$ units
 Latus Rectum: $\sqrt{10}$ units
 Eccentricity: $\frac{\sqrt{3}}{2} \approx 0.866$

11)



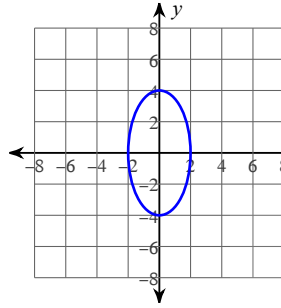
Center: $(0, 0)$
 Vertices: $(4, 0)$
 $(-4, 0)$
 Co-vertices: $(0, 2)$
 $(0, -2)$
 Foci: $(2\sqrt{3}, 0)$
 $(-2\sqrt{3}, 0)$
 Major Axis: 8 units
 Minor Axis: 4 units
 Latus Rectum: 2 units
 Eccentricity: $\frac{\sqrt{3}}{2} \approx 0.866$

12)



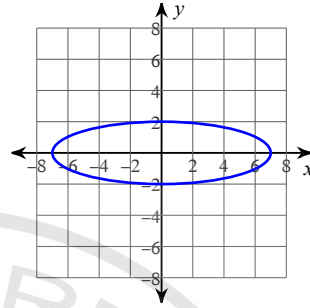
Center: $(0, 0)$
 Vertices: $(5, 0)$
 $(-5, 0)$
 Co-vertices: $(0, 2)$
 $(0, -2)$
 Foci: $(\sqrt{21}, 0)$
 $(-\sqrt{21}, 0)$
 Major Axis: 10 units
 Minor Axis: 4 units
 Latus Rectum: $\frac{8}{5}$ units
 Eccentricity: $\frac{\sqrt{21}}{5} \approx 0.917$

13)



Center: $(0, 0)$
 Vertices: $(0, 4)$
 $(0, -4)$
 Co-vertices: $(2, 0)$
 $(-2, 0)$
 Foci: $(0, 2\sqrt{3})$
 $(0, -2\sqrt{3})$
 Major Axis: 8 units
 Minor Axis: 4 units
 Latus Rectum: 2 units
 Eccentricity: $\frac{\sqrt{3}}{2} \approx 0.866$

14)



Center: $(0, 0)$
 Vertices: $(7, 0)$
 $(-7, 0)$
 Co-vertices: $(0, 2)$
 $(0, -2)$
 Foci: $(3\sqrt{5}, 0)$
 $(-3\sqrt{5}, 0)$
 Major Axis: 14 units
 Minor Axis: 4 units
 Latus Rectum: $\frac{8}{7}$ units
 Eccentricity: $\frac{3\sqrt{5}}{7} \approx 0.958$

