Graphing and Properties of Ellipses

Date_____ Period____

Identify the center, vertices, co-vertices, foci, length of the major axis, and length of the minor axis of each.

1) $\frac{x^2}{49} + \frac{y^2}{169} = 1$

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

3) $\frac{x^2}{95} + \frac{y^2}{30} = 1$

4) $\frac{x^2}{169} + \frac{y^2}{64} = 1$

5) $\frac{x^2}{64} + \frac{(y-6)^2}{121} = 1$

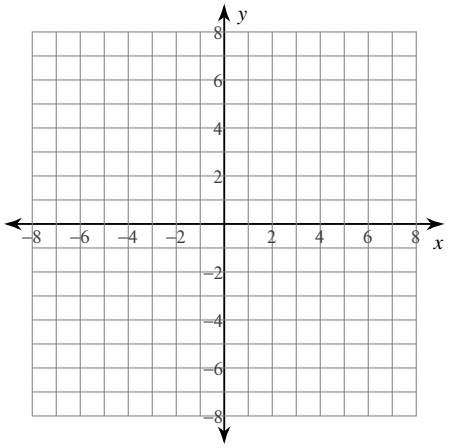
6) $\frac{(x+5)^2}{81} + \frac{(y-1)^2}{144} = 1$

7) $\frac{(x-3)^2}{49} + \frac{(y-9)^2}{4} = 1$

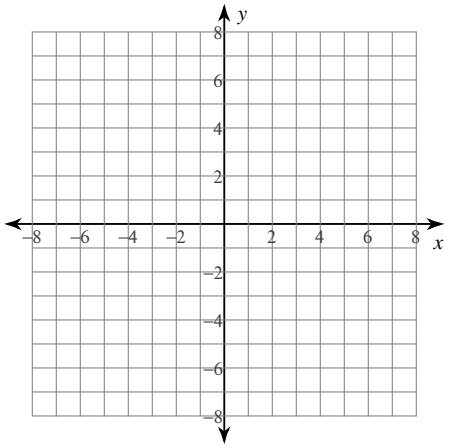
8) $\frac{x^2}{64} + \frac{(y-8)^2}{9} = 1$

Graph each equation.

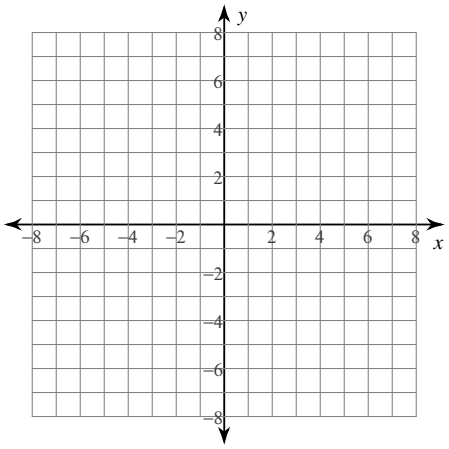
9) $\frac{x^2}{4} + \frac{y^2}{9} = 1$



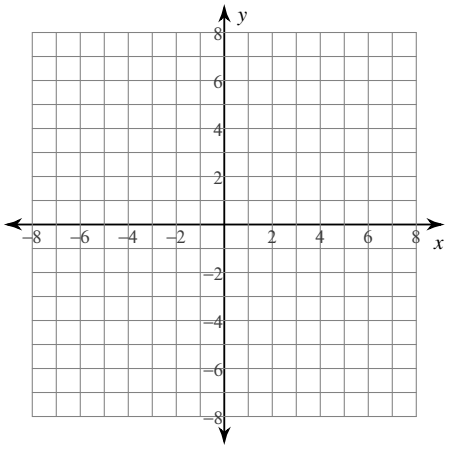
10) $\frac{x^2}{49} + y^2 = 1$



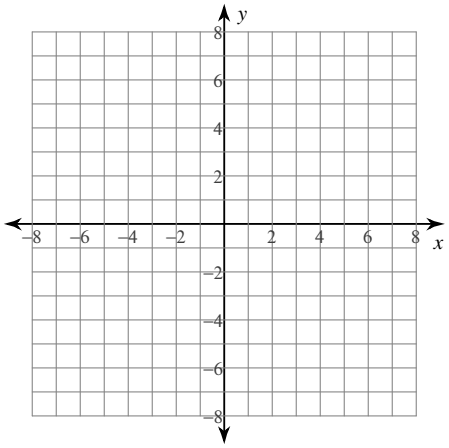
11) $\frac{x^2}{36} + \frac{y^2}{25} = 1$



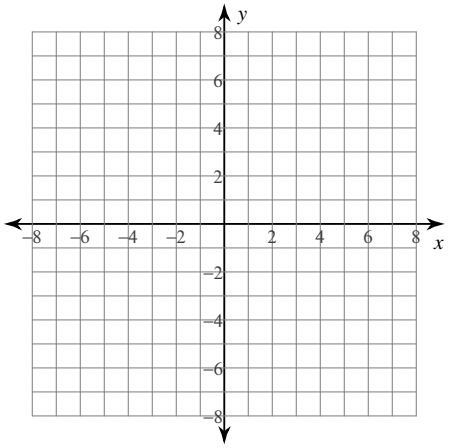
12) $\frac{x^2}{9} + \frac{y^2}{49} = 1$



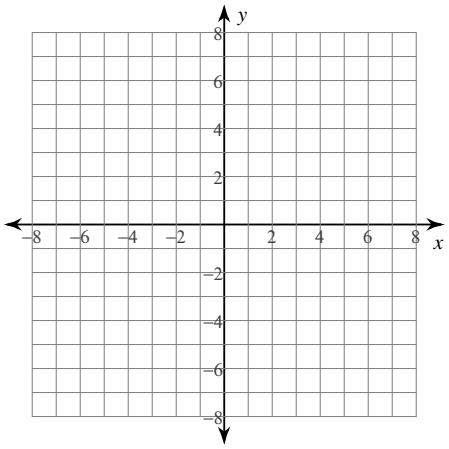
13) $\frac{x^2}{49} + \frac{(y-3)^2}{16} = 1$



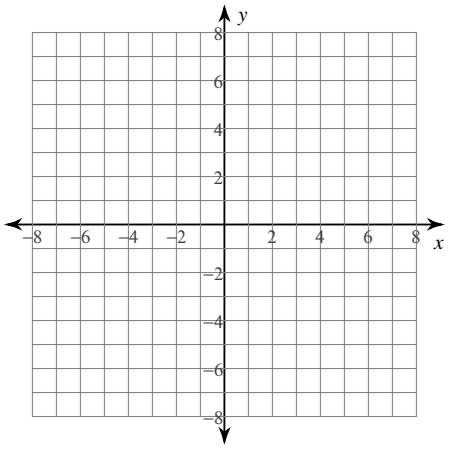
14) $\frac{(x-1)^2}{4} + \frac{y^2}{49} = 1$



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



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



Identify the length of the major axis, length of the minor axis, length of the latus rectum, and eccentricity of each.

17) $-16y + 52 = -2x^2 - 8x - y^2$

18) $4y^2 - 338x + 32y = -169x^2 + 443$

19) $\frac{(x+4)^2}{4} + \frac{(y+9)^2}{64} = 1$

20) $126y + 9y^2 - 8x - 131 = -4x^2$

Graphing and Properties of Ellipses

Date_____ Period____

Identify the center, vertices, co-vertices, foci, length of the major axis, and length of the minor axis of each.

1) $\frac{x^2}{49} + \frac{y^2}{169} = 1$

Center: $(0, 0)$
Vertices: $(0, 13)$, $(0, -13)$
Co-vertices: $(7, 0)$, $(-7, 0)$
Foci: $(0, 2\sqrt{30})$, $(0, -2\sqrt{30})$
Major Axis: 26 units
Minor Axis: 14 units

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

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

3) $\frac{x^2}{95} + \frac{y^2}{30} = 1$

Center: $(0, 0)$
Vertices: $(\sqrt{95}, 0)$, $(-\sqrt{95}, 0)$
Co-vertices: $(0, \sqrt{30})$, $(0, -\sqrt{30})$
Foci: $(\sqrt{65}, 0)$, $(-\sqrt{65}, 0)$
Major Axis: $2\sqrt{95}$ units
Minor Axis: $2\sqrt{30}$ units

4) $\frac{x^2}{169} + \frac{y^2}{64} = 1$

Center: $(0, 0)$
Vertices: $(13, 0)$, $(-13, 0)$
Co-vertices: $(0, 8)$, $(0, -8)$
Foci: $(\sqrt{105}, 0)$, $(-\sqrt{105}, 0)$
Major Axis: 26 units
Minor Axis: 16 units

5) $\frac{x^2}{64} + \frac{(y-6)^2}{121} = 1$

Center: $(0, 6)$
Vertices: $(0, 17)$, $(0, -5)$
Co-vertices: $(8, 6)$, $(-8, 6)$
Foci: $(0, 6 + \sqrt{57})$, $(0, 6 - \sqrt{57})$
Major Axis: 22 units
Minor Axis: 16 units

6) $\frac{(x+5)^2}{81} + \frac{(y-1)^2}{144} = 1$

Center: $(-5, 1)$
Vertices: $(-5, 13)$, $(-5, -11)$
Co-vertices: $(4, 1)$, $(-14, 1)$
Foci: $(-5, 1 + 3\sqrt{7})$, $(-5, 1 - 3\sqrt{7})$
Major Axis: 24 units
Minor Axis: 18 units

7) $\frac{(x-3)^2}{49}+\frac{(y-9)^2}{4}=1$

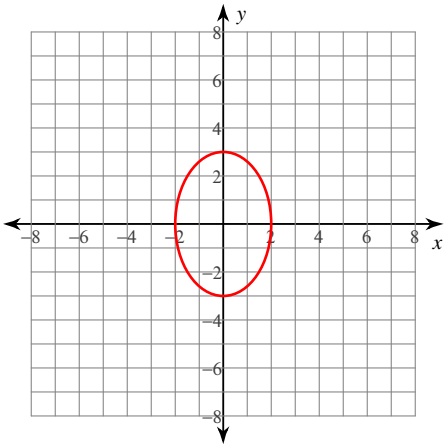
Center: $(3, 9)$
Vertices: $(10, 9), (-4, 9)$
Co-vertices: $(3, 11), (3, 7)$
Foci: $(3+3\sqrt{5}, 9), (3-3\sqrt{5}, 9)$
Major Axis: 14 units
Minor Axis: 4 units

8) $\frac{x^2}{64}+\frac{(y-8)^2}{9}=1$

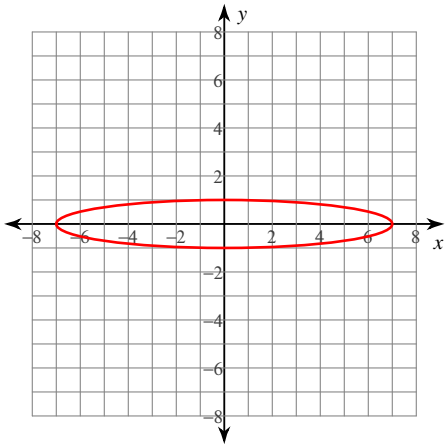
Center: $(0, 8)$
Vertices: $(8, 8), (-8, 8)$
Co-vertices: $(0, 11), (0, 5)$
Foci: $(\sqrt{55}, 8), (-\sqrt{55}, 8)$
Major Axis: 16 units
Minor Axis: 6 units

Graph each equation.

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



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



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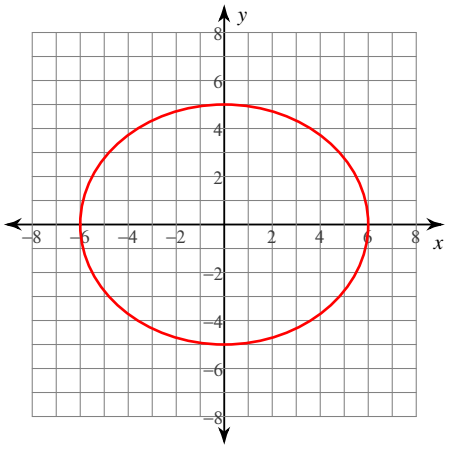
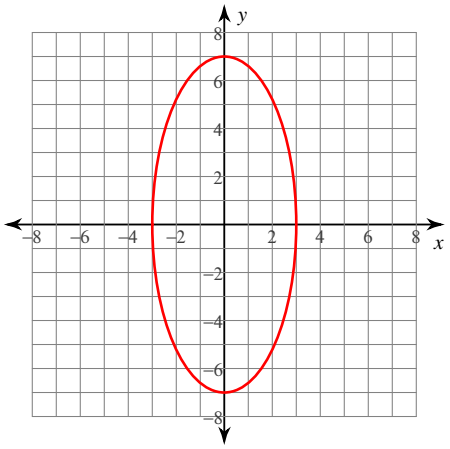
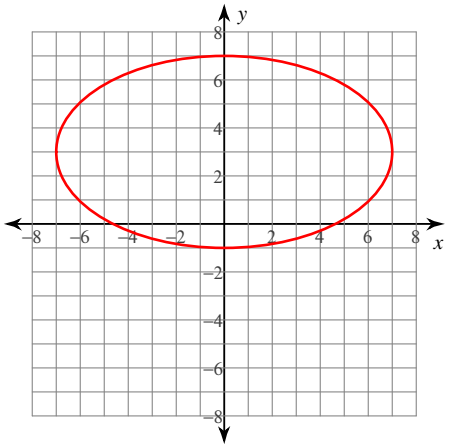


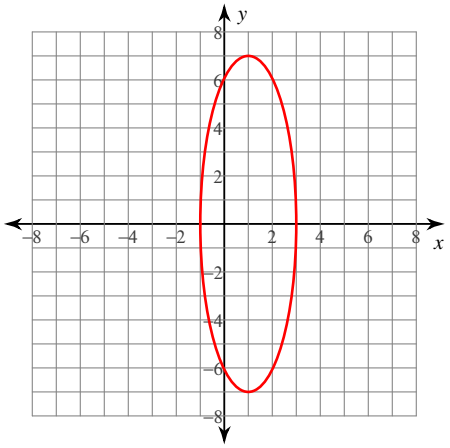
12) $\frac{x^2}{9} + \frac{y^2}{49} = 1$



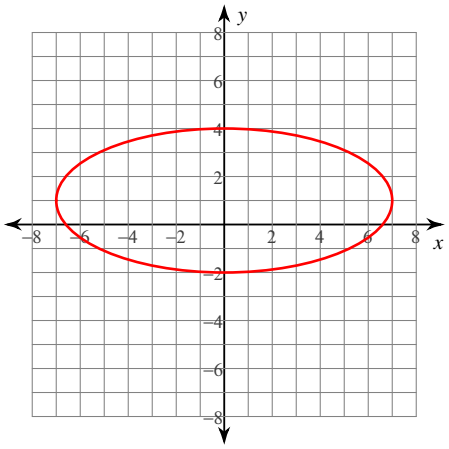
13) $\frac{x^2}{49} + \frac{(y-3)^2}{16} = 1$



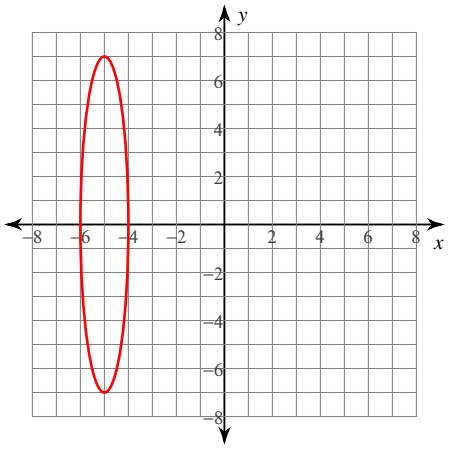
14) $\frac{(x-1)^2}{4} + \frac{y^2}{49} = 1$



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



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



Identify the length of the major axis, length of the minor axis, length of the latus rectum, and eccentricity of each.

17) $-16y + 52 = -2x^2 - 8x - y^2$

Major Axis: $4\sqrt{5}$ units
Minor Axis: $2\sqrt{10}$ units
Latus Rectum: $2\sqrt{5}$ units
Eccentricity: $\frac{\sqrt{2}}{2} \approx 0.707$

18) $4y^2 - 338x + 32y = -169x^2 + 443$

Major Axis: 26 units
Minor Axis: 4 units
Latus Rectum: $\frac{8}{13}$ units
Eccentricity: $\frac{\sqrt{165}}{13} \approx 0.988$

19) $\frac{(x+4)^2}{4} + \frac{(y+9)^2}{64} = 1$

Major Axis: 16 units
Minor Axis: 4 units
Latus Rectum: 1 unit
Eccentricity: $\frac{\sqrt{15}}{4} \approx 0.968$

20) $126y + 9y^2 - 8x - 131 = -4x^2$

Major Axis: 24 units
Minor Axis: 16 units
Latus Rectum: $\frac{32}{3}$ units
Eccentricity: $\frac{\sqrt{5}}{3} \approx 0.745$