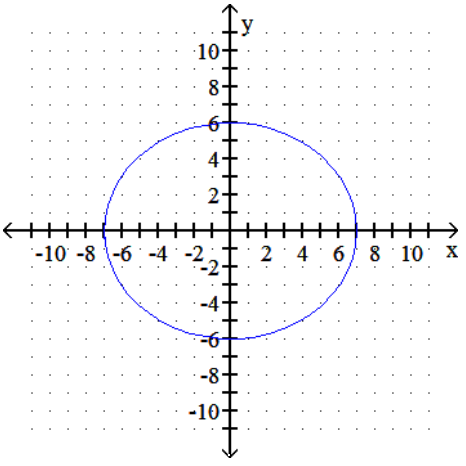
Practice 05
11.1 The Ellipse
11.2 The Hyperbola
11.3 The Parabola

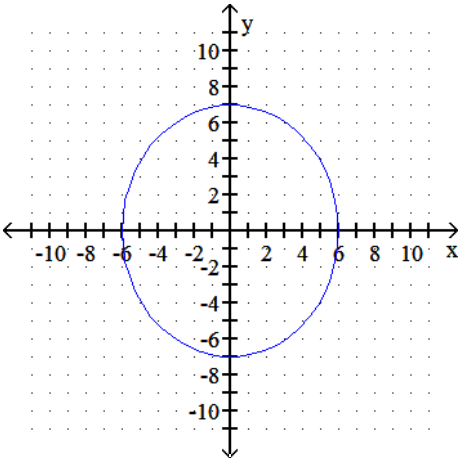
Graph the ellipse. Identify the center and vertices.

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

A) center: (6, 7);
vertices (-7, 0), (7, 0)

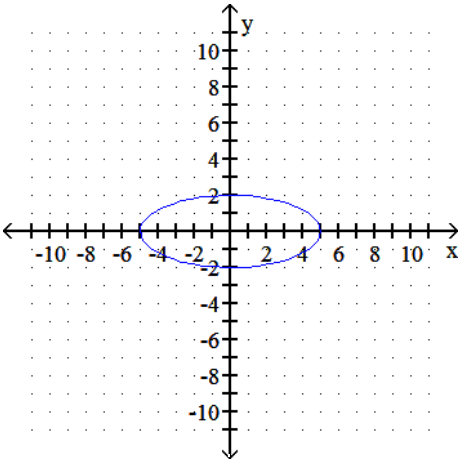


B) center: (0, 0);
vertices (0, -7), (0, 7)

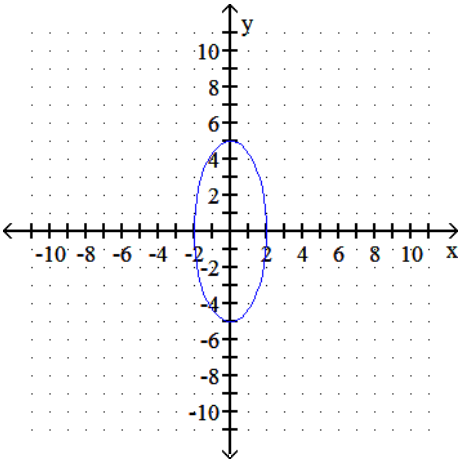


2) $4x^2 + 25y^2 = 100$ 2) _____

A) center: (0, 0);
vertices (-5, 0), (5, 0)



B) center: (0, 0);
vertices (0, -2), (0, 2)



Identify the vertices and the foci.

3) $\frac{x^2}{14} + \frac{y^2}{2} = 1$ 3) _____

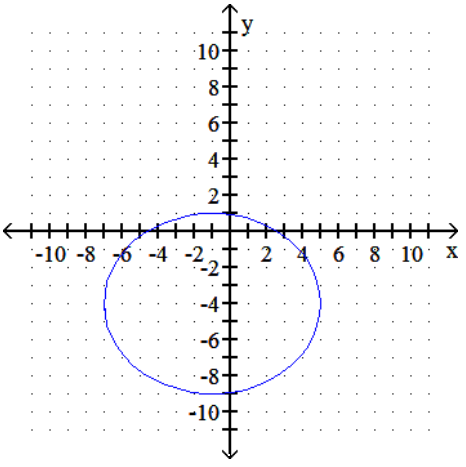
A) vertices: $(\sqrt{14}, 0)$ and $(-\sqrt{14}, 0)$;
foci: $(2\sqrt{3}, 0)$ and $(-2\sqrt{3}, 0)$

B) vertices: (0, 14) and (0, -14);
foci: (0, 12) and (0, -12)

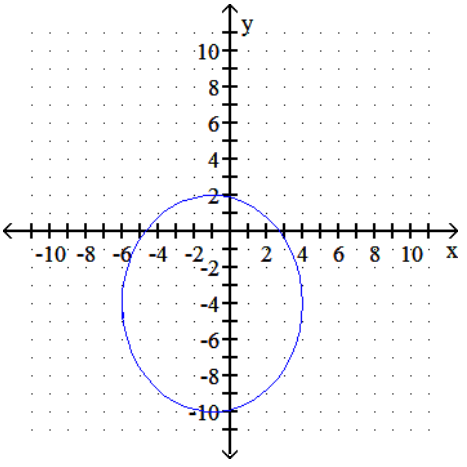
Graph the ellipse. Identify the center and the endpoints of the minor axis.

4) $\frac{(x+1)^2}{36} + \frac{(y+4)^2}{25} = 1$ 4) _____

A) center: (-1, -4);
endpts of minor axis: (-1, -9), (-1, 1)



B) center: (-1, -4);
endpts of minor axis: (4, -4), (-6, -4)



Identify the vertices and the foci.

5) $(x-6)^2 + \frac{y^2}{25} = 1$ 5) _____

A) vertices: (6, 5) and (6, -5);
foci: $(6, 2\sqrt{6})$ and $(6, -2\sqrt{6})$

B) vertices: (0, 5) and (0, -5);
foci: (0, 2) and (0, - 2)

Write the equation of the ellipse in standard form. Identify the vertices and foci.

6) $25x^2 + y^2 + 14y + 24 = 0$ 6) _____

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

vertices: (0, -12), (0, -2)
foci $(0, -7 - 2\sqrt{6})$, $(0, -7 + 2\sqrt{6})$

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

vertices: (0, 2), (0, 12)
foci $(0, 7 - 2\sqrt{6})$, $(0, 7 + 2\sqrt{6})$

Write the standard form of an equation of the ellipse subject to the given conditions.

7) Endpoints of minor axis: $(\sqrt{31},0)$ and $(-\sqrt{31},0)$ 7) _____
Foci: (0, 10) and (0, -10)

A) $\frac{x^2}{31} + \frac{y^2}{131} = 1$

B) $\frac{x^2}{41} + \frac{y^2}{31} = 1$

8) Vertices: (6, 1) and (-12, 1) 8) _____
Foci: $(-3 - \sqrt{65}, 1)$ and $(-3 + \sqrt{65}, 1)$

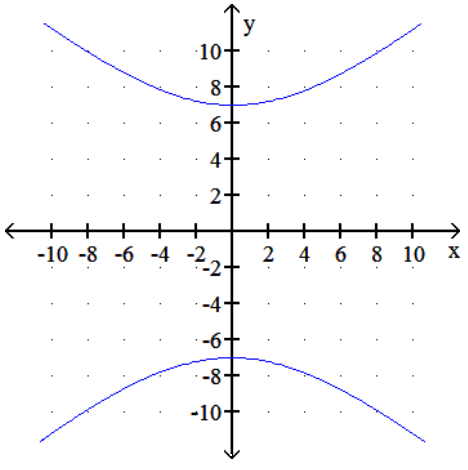
A) $\frac{(x + 3)^2}{81} + \frac{(y - 1)^2}{16} = 1$

B) $\frac{(x - 3)^2}{81} + \frac{(y + 1)^2}{16} = 1$

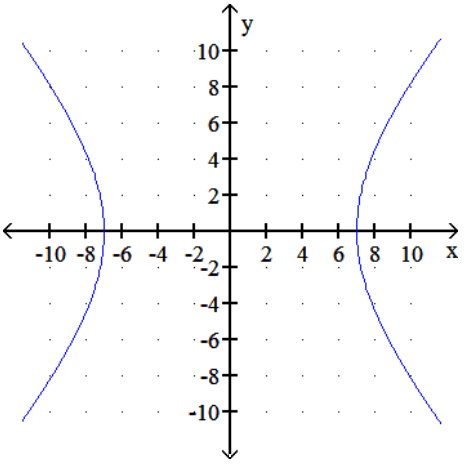
Graph the hyperbola. Identify the center and vertices.

9) $\frac{x^2}{49} - \frac{y^2}{64} = 1$ 9) _____

A) center: (7, 8);
vertices: (0, -7), (0, 7)



B) center: (0, 0);
vertices: (-7, 0), (7, 0)



Identify the vertices and the foci.

10) $-10x^2 + 8y^2 = -80$ 10) _____

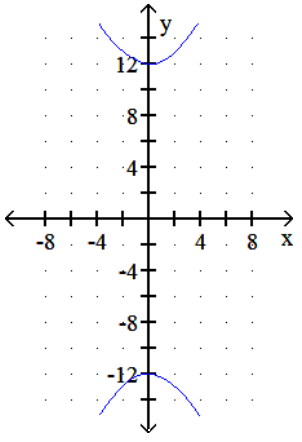
A) vertices: $(\sqrt{8}, 0)$, $(-\sqrt{8}, 0)$
foci: $(3\sqrt{2}, 0)$, $(-3\sqrt{2}, 0)$

B) vertices: $(\sqrt{10}, 0)$, $(-\sqrt{10}, 0)$
foci: $(3\sqrt{2}, 0)$, $(-3\sqrt{2}, 0)$

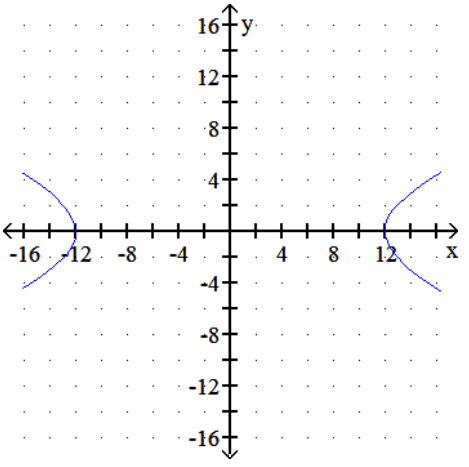
Graph the hyperbola. Identify the foci and write the equations for the asymptotes.

11) $\frac{y^2}{144} - \frac{x^2}{25} = 1$ 11) _____

A) foci: (0, -13), (0,13);
asymptotes: $y = -\frac{12}{5}x$, $y = \frac{12}{5}x$

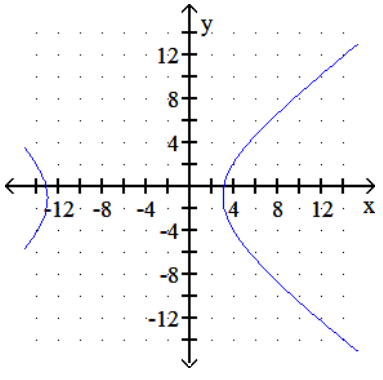


B) foci: (0, -12), (0,12);
asymptotes: $y = -\frac{5}{12}x$, $y = \frac{5}{12}x$

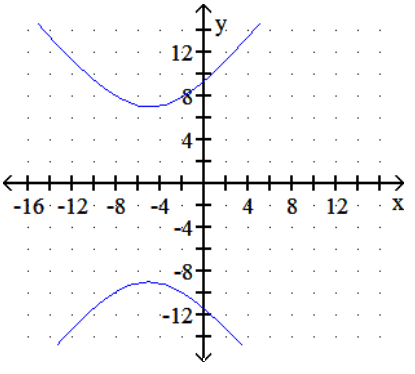


12) $\frac{(x+5)^2}{64} - \frac{(y+1)^2}{36} = 1$ 12) _____

A) foci: (-15, -1), (5, -1); asymptotes:
$y = -\frac{3}{4}x - \frac{19}{4}$, $y = \frac{3}{4}x + \frac{11}{4}$



B) foci: (-5, -11), (-5, 9); asymptotes:
$y = -\frac{3}{4}x - \frac{19}{4}$, $y = \frac{3}{4}x + \frac{11}{4}$



Identify the vertices and the foci.

13) $x^2 - \frac{(y+5)^2}{3} = 1$ 13) _____

A) vertices: $(0, -5 + \sqrt{3})$, $(0, -5 - \sqrt{3})$
foci: (0, -7), (0, -3)

B) vertices: (1, -5), (-1, -5)
foci: (2, -5), (-2, -5)

Write the standard form of the equation of the hyperbola subject to the given conditions.

14) Vertices: (-10, -5), (2, -5) 14) _____

Slope of the asymptotes: $\pm \frac{1}{2}$

A) $\frac{(y+5)^2}{9} - \frac{(x+4)^2}{36} = 1$

B) $\frac{(x+4)^2}{36} - \frac{(y+5)^2}{9} = 1$

A model of the form $x^2 = 4py$ is given. Identify the focus, and write an equation for the directrix.

15) $x^2 = 32y$ 15) _____

A) focus: (0, 8); directrix: $y = -8$

B) focus: (8, 0); directrix: $y = -8$

A model of the form $y^2 = 4px$ is given. Identify the focus, and write an equation for the directrix.

16) $y^2 = -3x$ 16) _____

A) focus: $\left(-\frac{3}{4}, 0\right)$; directrix: $x = -\frac{3}{4}$

B) focus: $\left(-\frac{3}{4}, 0\right)$; directrix: $x = \frac{3}{4}$

An equation of the form $y^2 = 4px$ is given. Identify the vertex, value of p, focus, focal diameter, and endpoints of the latus rectum.

17) $4y^2 = 64x$ 17) _____

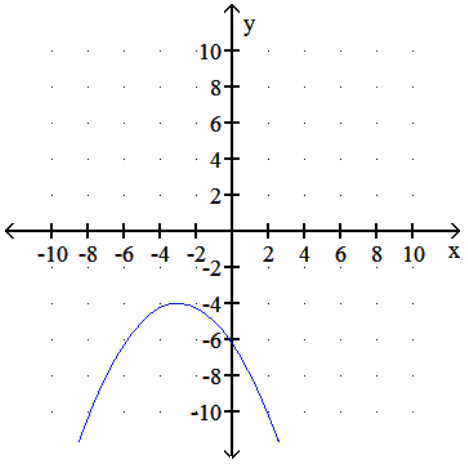
A) vertex: (0, 0); $p = 4$; focus: (4, 0); focal diameter: 16, endpoints of latus rectum: (4, -8); (4, 8)

B) vertex: (0, 0); $p = 4$; focus: (4, 0); focal diameter: 8, endpoints of latus rectum: (4, -4); (4, 4)

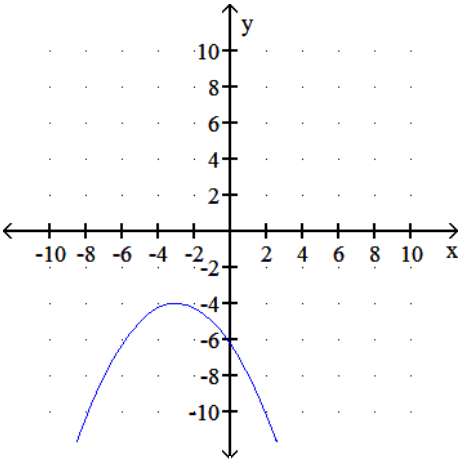
An equation of a parabola $(x - h)^2 = 4p(y - k)$ is given. Graph the parabola. Identify the vertex and the focal diameter.

18) $(x + 3)^2 = -4(y + 4)$ 18) _____

A) vertex: (-3, -4); focus: (-3, -5)



B) vertex: (-3, -4); focus: (-3,-1)



Answer Key
Testname: MAC1140_PRACTICE05

1) B
2) A
3) A
4) A
5) A
6) A
7) A
8) A
9) B
10) A
11) A
12) A
13) B
14) B
15) A
16) B
17) A
18) B