Chapter # 7 Practice Section:_____, Date:_____Name_____

Match the equation of the parabola with the appropriate description.

1) $y - 13 = 2(x + 4)^2$

A) Vertex at (–4, 13) B) Vertex at (4, –13) C) Vertex at (–13, 4) D) Vertex at (13, –4)

2) $y + 10 = 2(x - 12)^2$

A) Vertex at (24, 10) B) Vertex at (–12, 10) C) Vertex at (12, –10) D) Vertex at (–12, 5)

3) $y = -5x^2 + 6x + 4$

A) Opens right B) Opens left C) Opens down D) Opens up

4) $x = 2y^2 - 6y + 4$

A) Opens left B) Opens up C) Opens down D) Opens right

Graph the parabola.

5) $x = y^2 - 1$

6) $x = y^2 + 2y - 2$

7) $x = \frac{7}{8}(y - 5)^2 - 3$

Give the focus, directrix, and axis for the parabola.

8) $x^2 = 8y$

9) $-\frac{1}{20}x^2 = y$

10) $x = 6y^2$

11) $y^2 = 40x$

12) $y^2 = -24x$

13) $(x + 4)^2 = -24(y - 3)$

14) $(y - 7)^2 = -8(x + 5)$

Write an equation for the parabola with vertex at the origin.

15) Focus (2, 0)

16) Focus $\left(0, -\frac{1}{11}\right)$

17) Focus $\left(-\frac{1}{2}, 0\right)$

18) Focus (0, 8)

19) Through (–7, 7), opening to the left

20) Through (4, 3), opening to the right

Write an equation for the parabola.

21) vertex (8, 10), focus (8, 16)

22) vertex (3, –8), focus (3, –2)

23) vertex (4, –9), focus (7, –9)

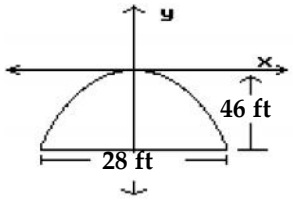
24) vertex (8, –3), focus (8, 2)

25) vertex (–6, 8), focus (–17, 8)

26) vertex (–5, –11), focus (–5, –15)

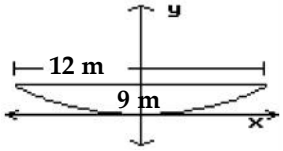
Solve the problem.

27)



A building has an entry the shape of a parabolic arch 46 ft high and 28 ft wide at the base. Find an equation for the parabola if the vertex is put at the origin of the coordinate system.

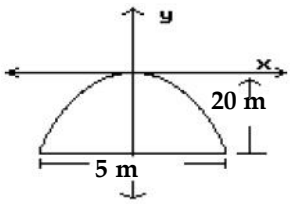
28)



A radio telescope has a parabolic surface. If it is 9 m deep and 12 m wide, how far is the focus from the vertex?

29) A cross–section of an irrigation canal is a parabola. If the surface of the water is 27 ft wide and the canal is 30 ft deep at the center, how deep is it 10 ft from the edge?

30)



A tunnel is in the shape of a parabola. The maximum height is 20 m and it is 5 m wide at the base. What is the vertical clearance 2 m from the edge of the tunnel?

Match the equation of the ellipse with the appropriate description.

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

A) x–intercepts ±36; y–intercepts ±16
B) x–intercepts ±4; y–intercepts ±6
C) x–intercepts ±6; y–intercepts ±4
D) x–intercepts ±16; y–intercepts ±36

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

A) x–intercepts ±6; y–intercepts ±4
B) x–intercepts ±36; y–intercepts ±4
C) x–intercepts ±16; y–intercepts ±36
D) x–intercepts ±4; y–intercepts ±6

33) $4x^2 + 64y^2 = 6400$

A) x–intercepts ±100; y–intercepts ±1600
B) x–intercepts ±1600; y–intercepts ±100
C) x–intercepts ±10; y–intercepts ±40
D) x–intercepts ±40; y–intercepts ±10

34) $\frac{49x^2}{4} + 16y^2 = 7056$

A) x–intercepts ±42; y–intercepts ±84
B) x–intercepts ±24; y–intercepts ±21
C) x–intercepts ±576; y–intercepts ±58
D) x–intercepts ±21; y–intercepts ±24

35) $64x^2 = 2304 - 4y^2$

A) x–intercepts ±6; y–intercepts ±24
B) x–intercepts ± 4; y–intercepts ±24
C) x–intercepts ±6; y–intercepts ±48
D) x–intercepts ±36; y–intercepts ±576

36) $49y^2 = 784 - 4x^2$

A) x–intercepts ±4; y–intercepts ±14
B) x–intercepts ±14; y–intercepts ±4
C) x–intercepts ±196; y–intercepts ±16
D) x–intercepts ±16; y–intercepts ±196

Graph the ellipse.

37) $\frac{x^2}{81} + \frac{y^2}{36} = 1$

38) $4x^2 + 25y^2 = 100$

39) $64x^2 + 36y^2 = 2304$

40) $\frac{(x-2)^2}{16} + \frac{(y+2)^2}{4} = 1$

Write an equation for the ellipse.

41) x–intercepts ±4; y–intercepts ±8

42) foci at $(\pm 4\sqrt{2}, 0)$; x–intercepts ±9

43) center at origin; length of major axis 14; y–intercepts ±3

44) foci at (±3, 0); x–intercepts ±5

45) foci at (1, –1), (1, –7); major axis length of 10

46) foci at (–6, –3), (0, –3); major axis length of 10

47) minor axis from (1, 3) to (7, 3); major axis from (4, –2) to (4, 8)

48) foci at (0, 13), (0, –13), through the point $\left(1, \frac{85\sqrt{7055}}{84}\right)$

Find the eccentricity of the ellipse.

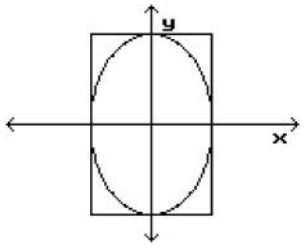
49) $x^2 + 2y^2 = 6$

50) $4x^2 + y^2 = 36$

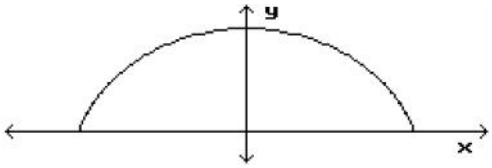
51) $x^2 + 4y^2 = 36$

Solve the problem.

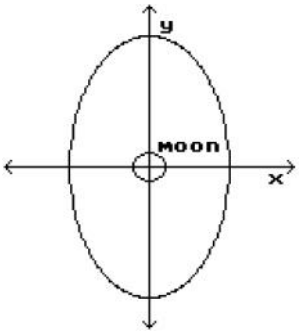
52) An elliptical riding path is to be built on a rectangular piece of property that measures 8 mi by 4 mi. Find an equation for the ellipse if the path is to touch the center of the property line on all 4 sides



53) A railroad tunnel is shaped like a semi–ellipse. The height of the tunnel at the center is 44 ft and the vertical clearance must be 22 ft at a point 24 ft from the center. Find an equation for the ellipse.



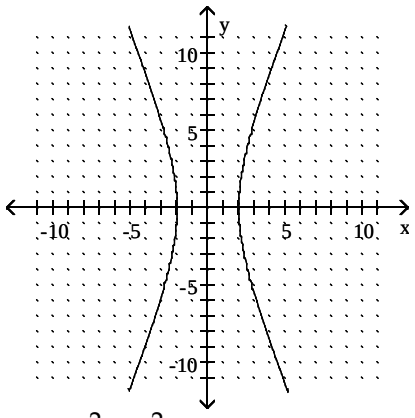
54) A satellite is to be put into an elliptical orbit around a moon. The moon is a sphere with radius of 681 km. Determine an equation for the ellipse if the distance of the satellite from the surface of the moon varies from 701 km to 480 km.



55) A rectangular board is 10 units by 12 units. How far from the long side of the board will the foci be located to determine the largest elliptical tabletop?

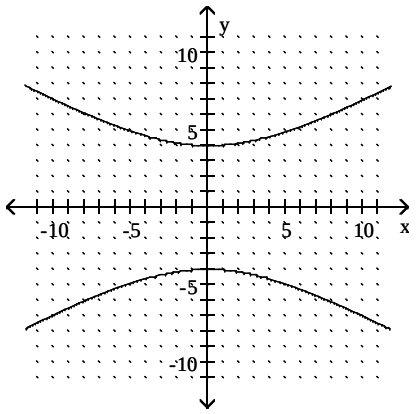
Choose the equation that matches the graph.

56)



A) $\frac{x^2}{25} + \frac{y^2}{4} = 1$ B) $\frac{x^2}{25} - \frac{y^2}{4} = 1$ C) $\frac{x^2}{4} + \frac{y^2}{25} = 1$ D) $\frac{x^2}{4} - \frac{y^2}{25} = 1$

57)



A) $\frac{y^2}{49} - \frac{x^2}{16} = 1$ B) $\frac{x^2}{16} - \frac{y^2}{49} = 1$ C) $\frac{y^2}{16} - \frac{x^2}{49} = 1$ D) $\frac{x^2}{49} + \frac{y^2}{16} = 1$

Graph the hyperbola.

58) $\frac{y^2}{49} - \frac{x^2}{4} = 1$

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

60) $\frac{(y+2)^2}{64} - \frac{(x+2)^2}{16} = 1$

61) $25x^2 - 9y^2 = 225$

Find the center, foci, and asymptotes of the hyperbola.

62) $\frac{x^2}{256} - \frac{y^2}{144} = 1$

63) $\frac{y^2}{64} - \frac{x^2}{36} = 1$

Find the eccentricity of the hyperbola.

64) $x^2 - y^2 = 49$

Write an equation for the hyperbola.

65) vertices at (3, 0), (–3, 0); foci at (4, 0), (–4, 0)

66) vertices at (0, 4), (0, –4); foci at (0, 5), (0, –5)

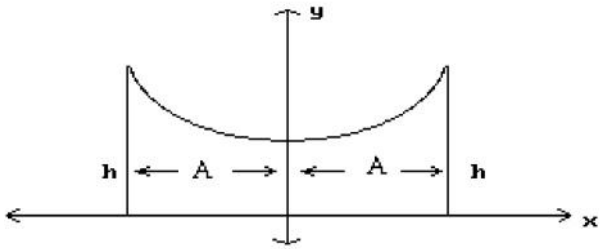
67) vertices at (–1, 1) and (7, 1), passing through the point (–2, 16)

68) x–intercept 4; center at origin; passing through $(4\sqrt{5}, 6)$

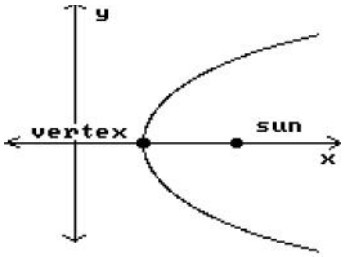
Solve the problem.

69) The roof of a building is in the shape of the hyperbola $y^2 - x^2 = 43$, where x and y are in meters. Refer to the figure and determine the height h of the outside walls.

A = 9 m

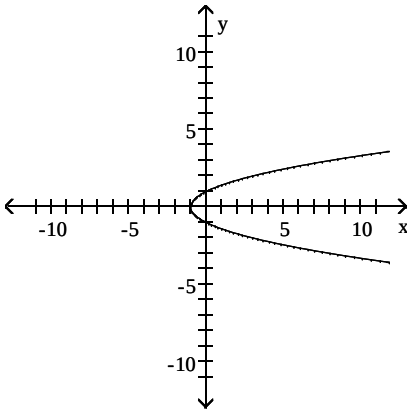


70) A comet follows the hyperbolic path described by $\frac{x^2}{15} - \frac{y^2}{19} = 1$, where x and y are in millions of miles. If the sun is the focus of the path, how close to the sun is the vertex of the path?



Answer Key
Testname: PP7

1) A
2) C
3) C
4) D
5)



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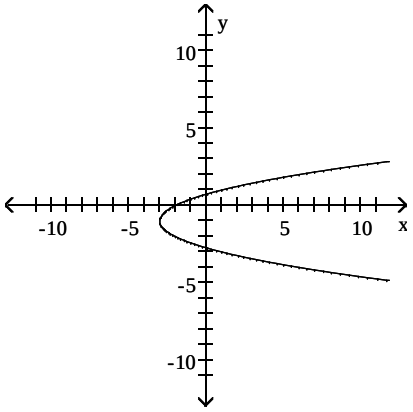

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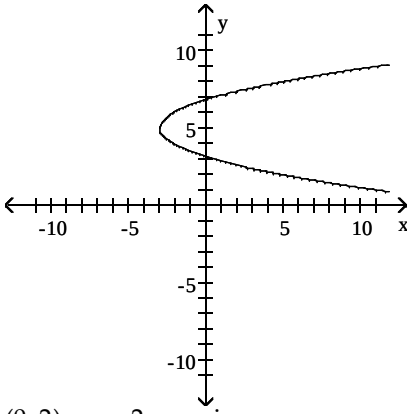
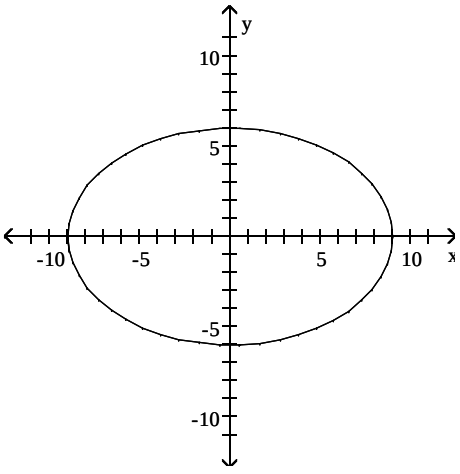
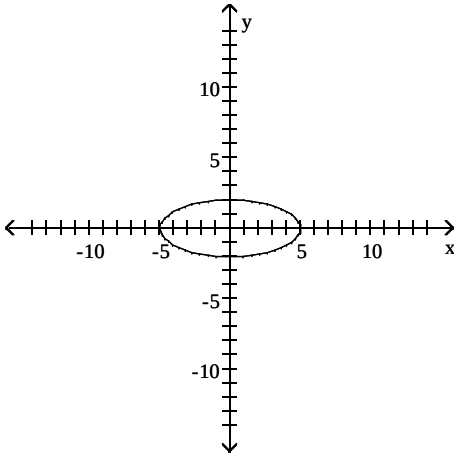


8) (0, 2), y = –2, y–axis
9) (0, –5), y = 5, y–axis
10) $\left(\frac{1}{24}, 0\right)$, $x = -\frac{1}{24}$, x–axis
11) (10, 0), x = –10, x–axis
12) (–6, 0), x = 6, x–axis
13) (–4, –3), y = 9, x = –4
14) (–7, 7), x = –3, y = 7
15) $y^2 = 8x$
16) $x^2 = -\frac{4}{11}y$
17) $y^2 = -2x$
18) $x^2 = 32y$
19) $y^2 = -7x$
20) $y^2 = \frac{9}{4}x$
21) $24(y - 10) = (x - 8)^2$
22) $(x - 3)^2 = 24(y + 8)$
23) $(y + 9)^2 = 12(x - 4)$
24) $20(y + 3) = (x - 8)^2$
25) $(y - 8)^2 = -44(x + 6)$
26) $(x + 5)^2 = -16(y + 11)$
27) $x^2 = -4.3y$
28) 1 m
29) 28 ft
30) 19.2 m
31) B
32) A
33) D
34) B
35) A
36) B
37)



38)



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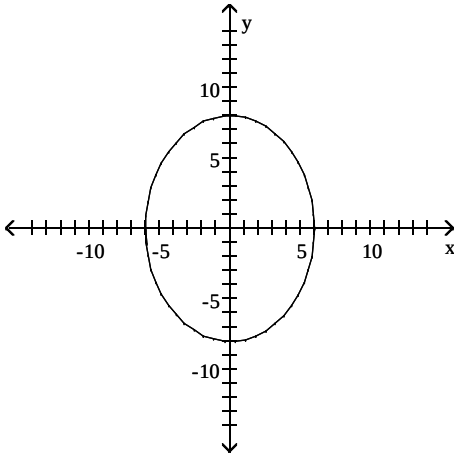
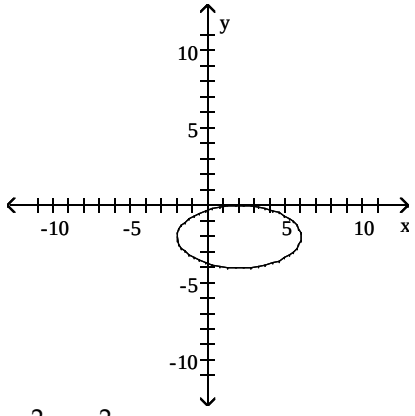


40)



41) $\frac{x^2}{16} + \frac{y^2}{64} = 1$

42) $\frac{x^2}{81} + \frac{y^2}{49} = 1$

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

44) $\frac{x^2}{25} + \frac{y^2}{16} = 1$

45) $\frac{(y+4)^2}{25} + \frac{(x-1)^2}{16} = 1$

46) $\frac{(x+3)^2}{25} + \frac{(y+3)^2}{16} = 1$

47) $\frac{(x-4)^2}{9} + \frac{(y-3)^2}{25} = 1$

48) $\frac{x^2}{7056} + \frac{y^2}{7225} = 1$

49) $\frac{\sqrt{2}}{2}$

50) $\frac{\sqrt{3}}{2}$

51) $\frac{\sqrt{3}}{2}$

52) $\frac{x^2}{4} + \frac{y^2}{16} = 1$

53) $\frac{x^2}{768} + \frac{y^2}{1936} = 1$

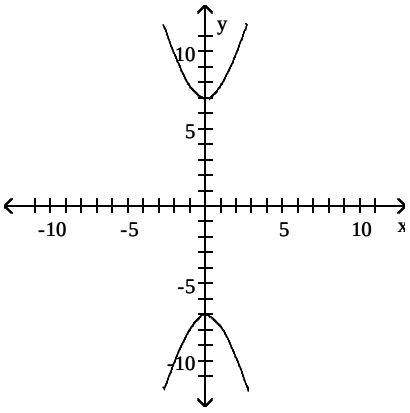
54) $\frac{x^2}{1161^2} + \frac{y^2}{1382^2} = 1$

55) 2.7 units

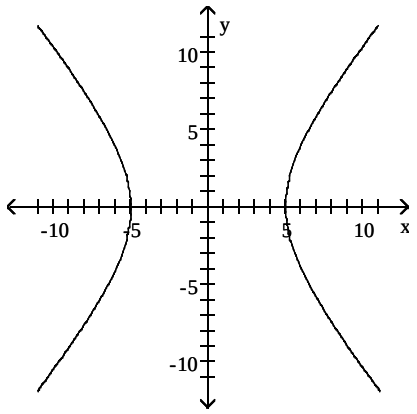
56) D

57) C

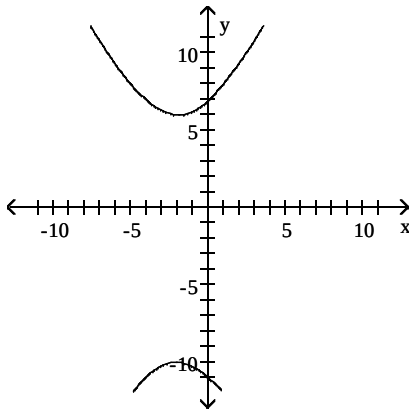
58)



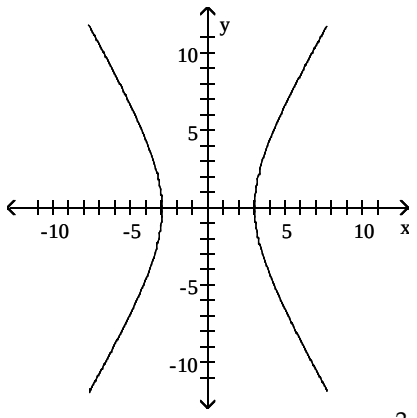
59)



60)



61)



62) C: (0, 0); F: (–20, 0), (20, 0); A: $y = \frac{3}{4}x$, $y = -\frac{3}{4}x$

63) C: (0, 0); F: (0, –10), (0, 10); A: $y = \frac{4}{3}x$, $y = -\frac{4}{3}x$

64) $\sqrt{2}$

65) $\frac{x^2}{9} - \frac{y^2}{7} = 1$

66) $\frac{y^2}{16} - \frac{x^2}{9} = 1$

67) $\frac{(x-3)^2}{16} - \frac{(y-1)^2}{400} = 1$

68) $\frac{x^2}{16} - \frac{y^2}{9} = 1$

69) 11.1 m

70) 2 million mi