

pg. 566 #2-18 even, 19, 20, 23, 24, 42, 44

2. $\frac{y^2}{169} - \frac{x^2}{16} = 1$

vertical opening \leftarrow y is first vertices $(0, -13), (0, 13)$

$m = \frac{y}{x} = \frac{13}{4}$ and $-\frac{13}{4}$

graph paper

10. foci outside vertices $c^2 > a^2$

$c^2 = a^2 + b^2$

$c^2 = 81 + 16$

$c^2 = 97$

$c = \pm\sqrt{97}$

y is first, vertical opening

foci $(0, -\sqrt{97})$ $(0, \sqrt{97})$

vertices $(0, -a)$ $(0, a)$

asymptotes $(m = \frac{y}{x})$ $y = \frac{9}{4}x$ $y = -\frac{9}{4}x$

19. $\frac{x^2}{69169} - \frac{y^2}{96480} = 1$

$c^2 = a^2 + b^2$

$(407)^2 = (263)^2 + b^2$

$165649 = 69169 + b^2$

$96480 = b^2$

23. vertices $(\pm 3, 0)$ x-coordinate. horizontal opening

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

$c^2 = a^2 + b^2$

$5^2 = 3^2 + b^2$

$25 = 9 + b^2$

$16 = b^2$

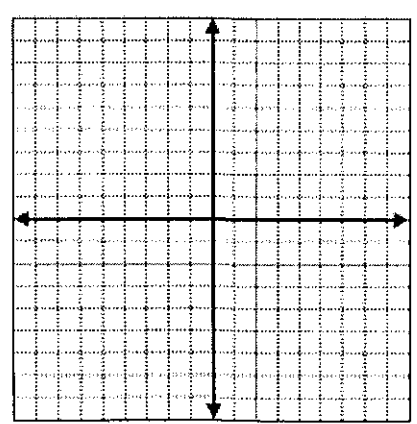
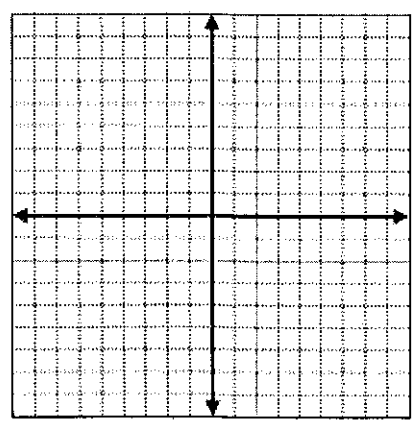
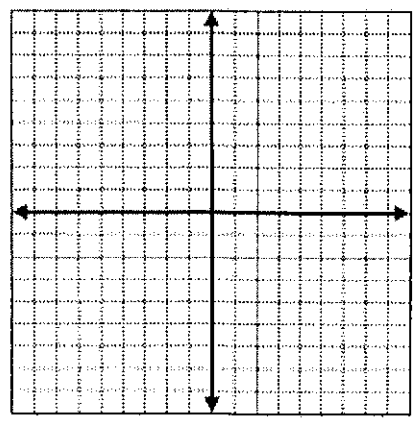
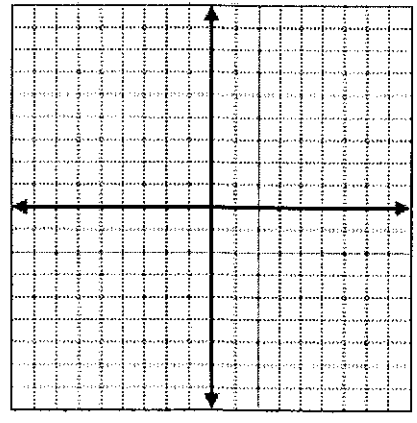
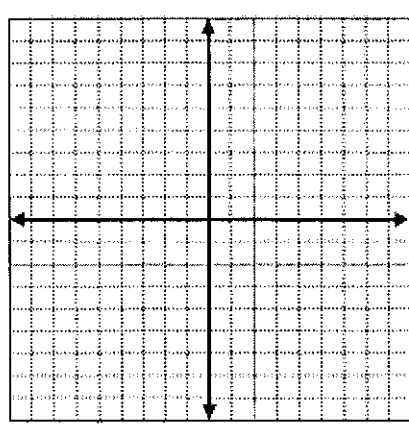
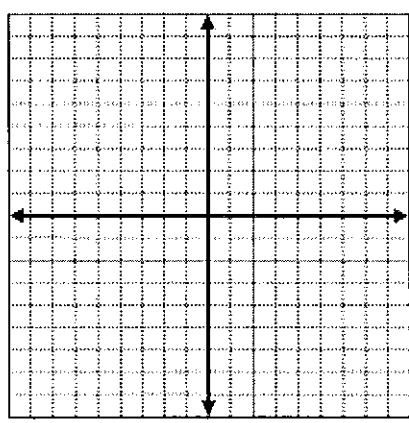
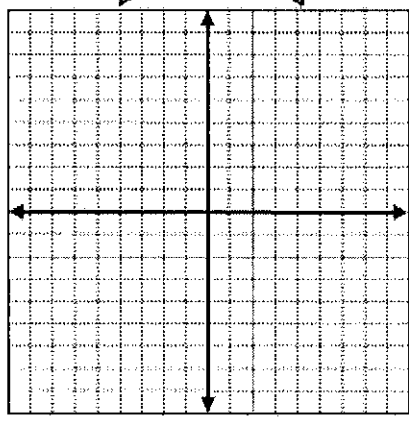
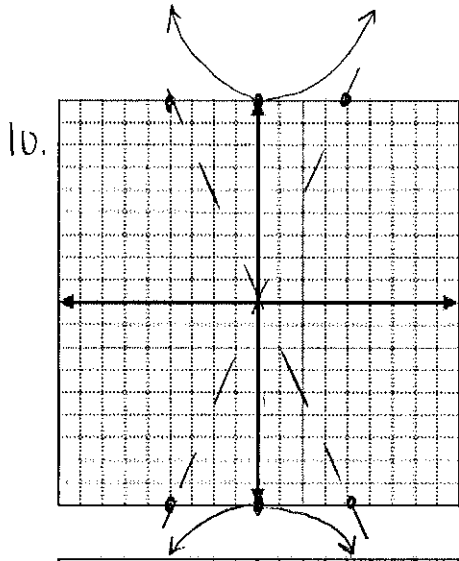
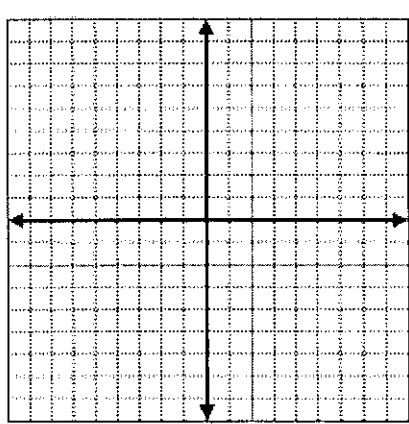
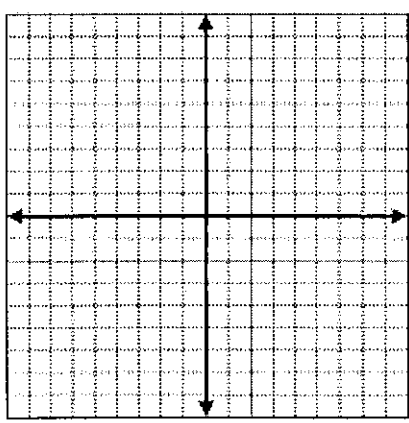
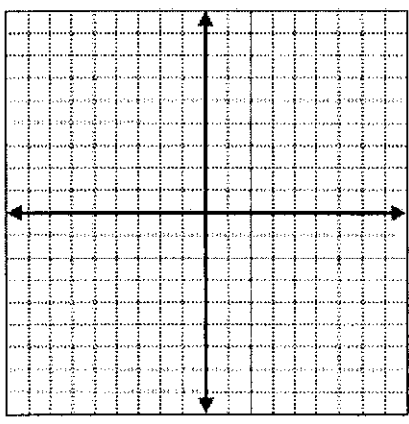
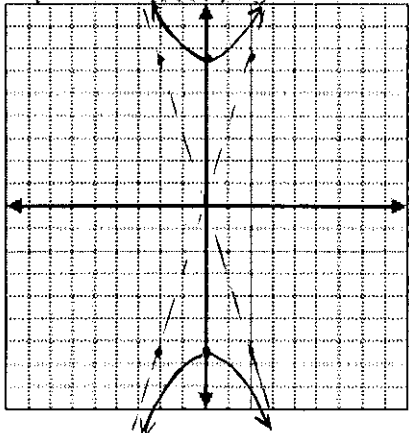
$$42. \frac{16x^2}{400} - \frac{25y^2}{400} = \frac{400}{400}$$

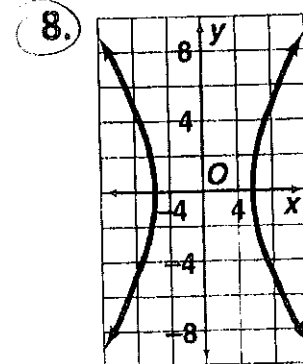
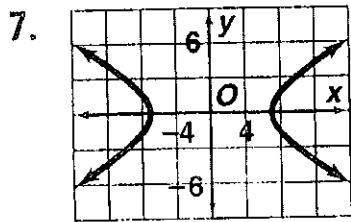
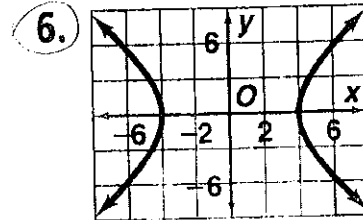
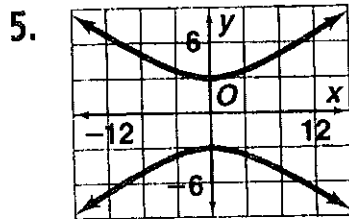
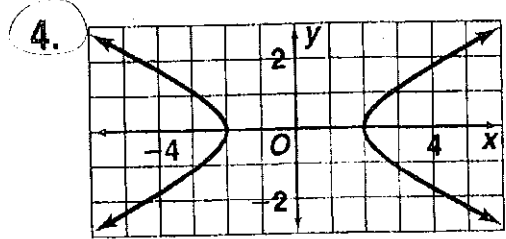
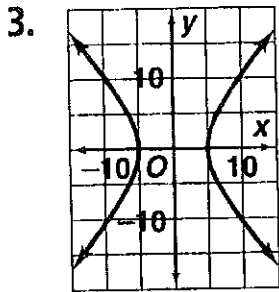
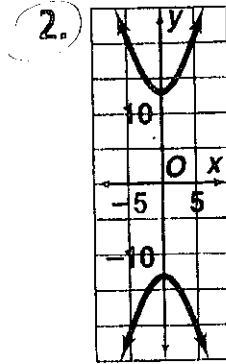
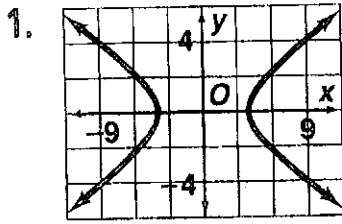
$$\frac{x^2}{25} - \frac{y^2}{16} = 1 \quad x \text{ first, horizontal opening}$$

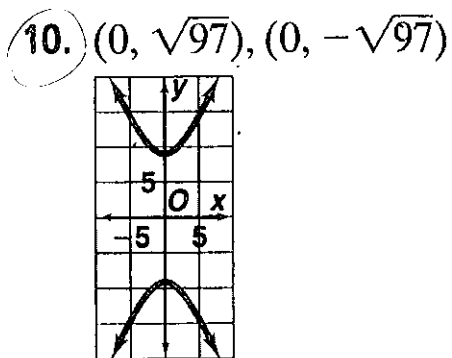
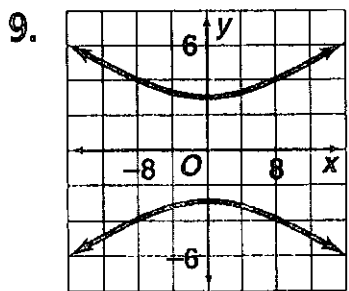
vertices $(-5, 0)$ $(5, 0)$

asymptotes $(m = \frac{y}{x})$ $y = \frac{4}{5}x$ $y = -\frac{4}{5}x$

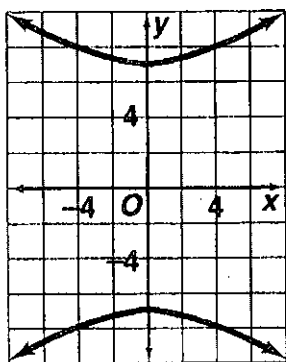
2. each tick mark is 1 unit



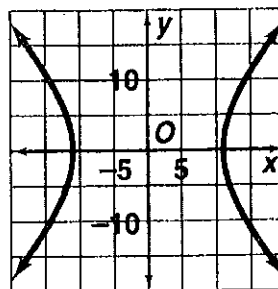




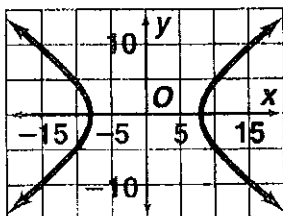
11. $(0, \sqrt{113}), (0, -\sqrt{113})$



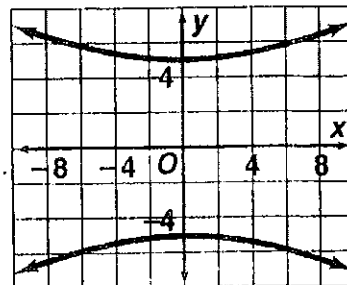
12. $(\sqrt{265}, 0), (-\sqrt{265}, 0)$



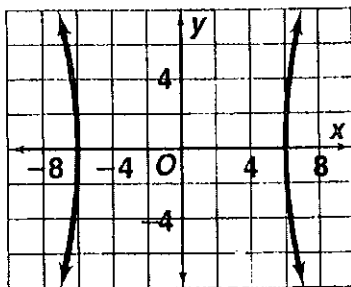
13. $(10, 0), (-10, 0)$



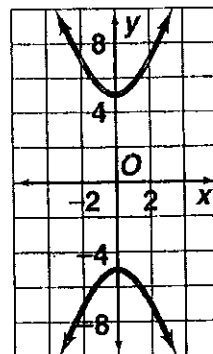
14. $(0, 5\sqrt{5}), (0, -5\sqrt{5})$



15. $(\sqrt{205}, 0), (-\sqrt{205}, 0)$

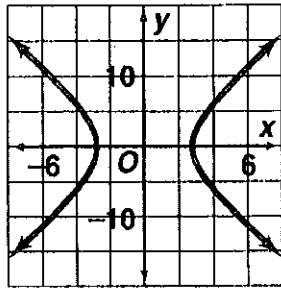


16. $(0, \sqrt{29}), (0, -\sqrt{29})$

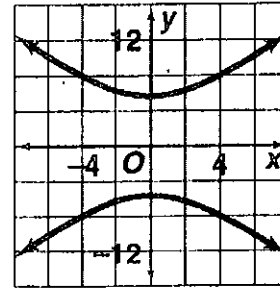


Answers for Lesson 10-5, pp. 566-568 Exercises (cont.)

17. $(2\sqrt{11}, 0), (-2\sqrt{11}, 0)$



18. $(0, 4\sqrt{3}), (0, -4\sqrt{3})$



19. $\frac{x^2}{69,169} - \frac{y^2}{96,480} = 1$

20. $\frac{x^2}{240,000} - \frac{y^2}{10,000} = 1$

21. $\frac{x^2}{192,432,384} - \frac{y^2}{170,203,465} = 1$

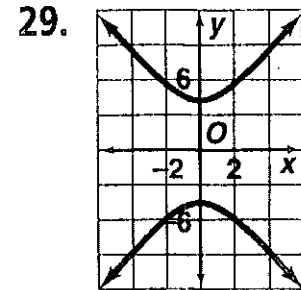
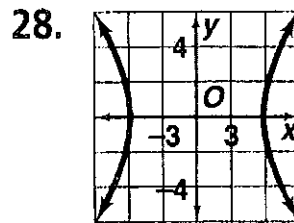
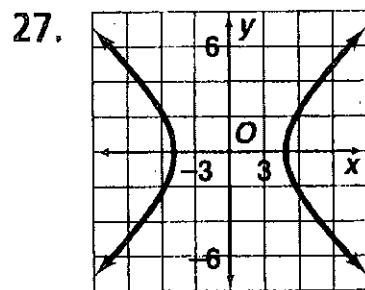
22. $\frac{x^2}{1.856 \times 10^{12}} - \frac{y^2}{5.270 \times 10^{11}} = 1$

23. $\frac{x^2}{9} - \frac{y^2}{16} = 1$

24. $\frac{y^2}{25} - \frac{x^2}{144} = 1$

25. $y^2 - \frac{x^2}{3} = 1$

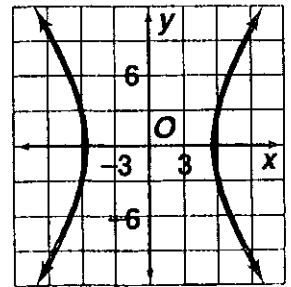
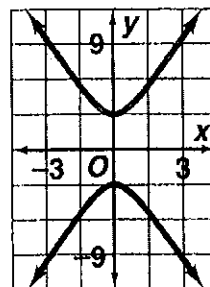
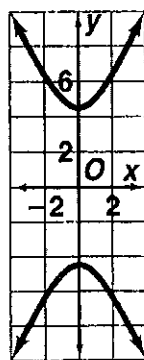
26. $\frac{x^2}{4} - y^2 = 1$



30. $\frac{y^2}{20.25} - \frac{x^2}{4} = 1$

31. $\frac{y^2}{9} - x^2 = 1$

32. $\frac{x^2}{32} - \frac{y^2}{64} = 1$



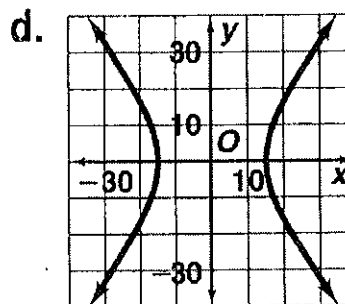
15

39. $(0, \pm 1), y = \pm x$ 40. $(\pm 1, 0), y = \pm \frac{1}{3}x$
 41. $(0, \pm 8), y = \pm 2x$ 42. $(\pm 5, 0), y = \pm \frac{4}{5}x$
 43. $(0, \pm 4), y = \pm 2x$ 44. $(\pm 7, 0), y = \pm \frac{5}{7}x$

45. Replace x with $x - 3$ and y with $y + 5$ and rewrite to obtain

$$\frac{(x - 3)^2}{9} - \frac{(y + 5)^2}{4} = 1$$

46. a. your airport
 b. 30 km
 c. $\frac{x^2}{225} - \frac{y^2}{351} = 1$



the branch that contains the vertex closest to your airport

47. a. For the x -values in those rows, the value of $x^2 - 9$ is negative and so $\sqrt{x^2 - 9}$ is not a real number.
 b. As x increases, y increases, but the difference between x and y gets closer to zero.
 c. No; for positive values of x greater than 3, $x = \sqrt{x^2}$ and $\sqrt{x^2} \neq \sqrt{x^2 - 9}$.
 d. $y = x, y = -x$;

