Answers for Lesson 13–6 Exercises

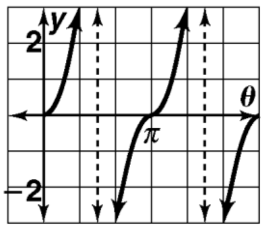
1. 0 **2.** 0 **3.** –1

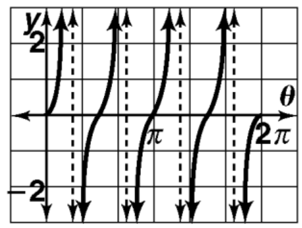
4. undefined **5.** 1 **6.** 0

7. 1 **8.** undefined **9.** π

10. $\frac{\pi}{2}$ **11.** $\frac{\pi}{5}, \theta = -\frac{\pi}{10}, \frac{\pi}{10}$ **12.** $\frac{2\pi}{3}, \theta = -\frac{\pi}{3}, \frac{\pi}{3}$

13. $\frac{\pi}{4}, \theta = -\frac{\pi}{8}, \frac{\pi}{8}$ **14.** $\frac{3\pi^2}{2}, \theta = -\frac{3\pi^2}{4}, \frac{3\pi^2}{4}$

15.


16.


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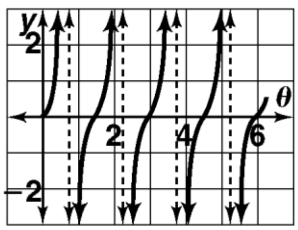
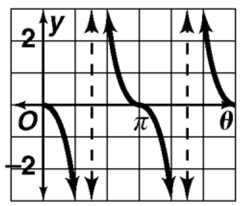
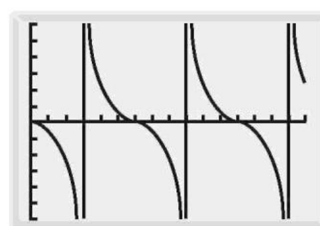


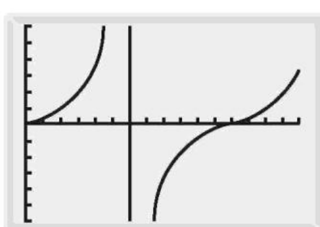
18.


19.

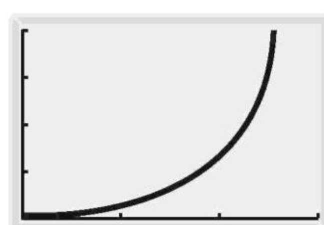

50, undefined, –50

20.


–100, undefined, 100

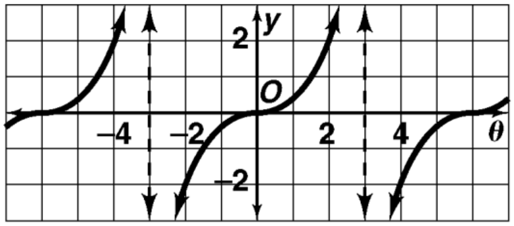
21.


≈51.8,125, ≈301.8

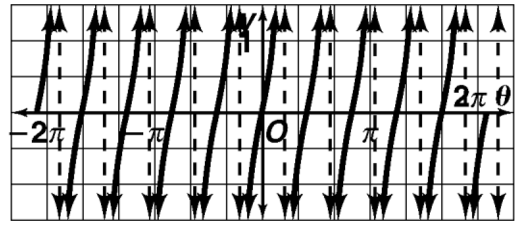
22. a.


b. ≈14.3 ft
c. ≈20.2 ft

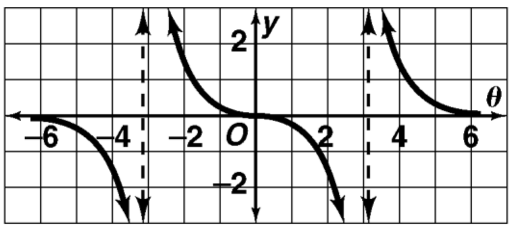
23. 6



24. $\frac{2\pi}{5}$



25. $\frac{2\pi^2}{3}$

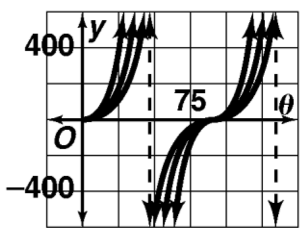


26. 1.11,4.25

27. 2.03,5.18

28. 0.08,1.65,3.22,4.79

29. a.

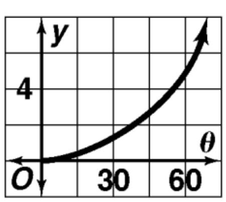


b. Check students' work; doubling the coefficient of the tangent function also doubles the output.

c. Answers may vary. Sample: the values of $y = 600 \tan x$ will be three times greater than the values of $y = 200 \tan x$.

30. a. 140.4 ft

b.



≈ ≈1.7 in., ≈5.2 in.

c. ≈5.2 in.^{2}, ≈15.6 in.^{2}

d. ≈3888 tiles, ≈1296 tiles

31. Check students' work.

32. The asymptotes occur at $x = -\frac{\pi}{2b}$ and $x = \frac{\pi}{2b}$; adding or subtracting multiples of their difference, b, will give other asymptote values.

33. 200

34. 0

35. 135

36. –162

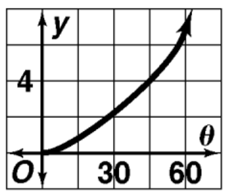
37. 70

38. $y = \tan\left(\frac{1}{2}x\right)$

39. $y = -\tan\left(\frac{1}{2}x\right)$

40. $y = -\tan x$ or $y = \tan(-x)$

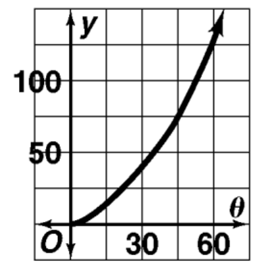
41. $y = \tan(2x)$

42. a. 

≈6.9 ft

b. ≈27.7 ft^2

c. ≈166.3 ft^2

43. a. 

b. ≈130 ft

c. ≈61,500 ft2

44. a. Check students' work.

b. The new pattern is asymptote—(–a)—zero—(a)—asymptote.

45. Answers may vary. Sample: Triangles *OAP* and *OBQ* both share the angle θ and each triangle has a right angle, so they are similar by AA. $\frac{\sin\theta}{\cos\theta} = \frac{AP}{OA} = \frac{BQ}{OB} = \frac{\tan\theta}{1}$. Thus $\frac{\sin\theta}{\cos\theta} = \tan\theta$.

46. 2; for $0 \leq x < 2\pi$, x is nonnegative, and there are only 2 branches of the graph of the tangent function above the x–axis.