

# Practice 13-6

## The Tangent Function

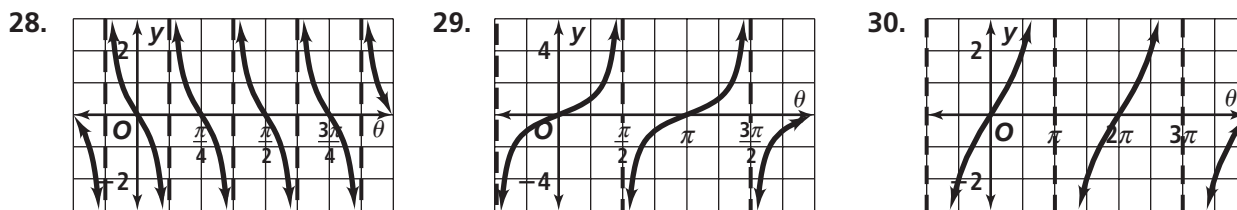
Identify the period and tell where the asymptotes occur, in the interval from 0 to  $2\pi$ , for each function.

- |                          |                                     |                                  |
|--------------------------|-------------------------------------|----------------------------------|
| 1. $y = \tan \theta$     | 2. $y = 2 \tan \frac{\theta}{2}$    | 3. $y = 3 \tan \frac{\theta}{4}$ |
| 4. $y = 4 \tan 2\theta$  | 5. $y = -\tan \frac{\pi}{2} \theta$ | 6. $y = -2 \tan \pi\theta$       |
| 7. $y = -3 \tan 2\theta$ | 8. $y = -4 \tan \theta$             | 9. $y = 0.5 \tan \pi\theta$      |

Sketch two cycles of the graph of each function.

- |                             |   |                              |
|-----------------------------|---|------------------------------|
| 10. $y = \tan \theta$       | 11. $y = 2 \tan \theta$                   | 12. $y = -\tan \theta$       |
| 13. $y = -2 \tan \theta$    | 14. $y = -0.5 \tan 2\theta$               | 15. $y = 3 \tan \theta$      |
| 16. $y = -3 \tan 2\theta$   | 17. $y = 5 \tan \frac{\pi}{2} \theta$     | 18. $y = 2 \tan 3\theta$     |
| 19. $y = 0.5 \tan 2\theta$  | 20. $y = -2.5 \tan \frac{\pi}{2} \theta$  | 21. $y = -5 \tan 2\pi\theta$ |
| 22. $y = -2 \tan 4\theta$   | 23. $y = -0.25 \tan 3\theta$              | 24. $y = -4 \tan 4\pi\theta$ |
| 25. $y = -2.25 \tan \theta$ | 26. $y = -0.25 \tan \frac{\pi}{3} \theta$ | 27. $y = 0.75 \tan 4\theta$  |

Identify the period of each tangent function.



Use the graph of  $y = \tan \theta$  to find each value. If the tangent is undefined at that point, write *undefined*.

- |  |   |
|--|---|
| 31. $\tan \frac{\pi}{2}$               | 32. $\tan \left(-\frac{3\pi}{4}\right)$ |
| 33. $\tan \left(-\frac{\pi}{4}\right)$ | 34. $\tan \frac{3\pi}{2}$               |

Using your graphing calculator, graph each function on the interval  $0^\circ < x < 470^\circ$  and  $-300 < y < 300$ . Evaluate the function at  $x = 45^\circ, 90^\circ,$  and  $135^\circ$ .

- |                      |  |                      |
|----------------------|--|----------------------|
| 35. $y = 200 \tan x$ | 36. $y = -75 \tan \left(\frac{1}{4}x\right)$ | 37. $y = -50 \tan x$ |
|----------------------|--|----------------------|