

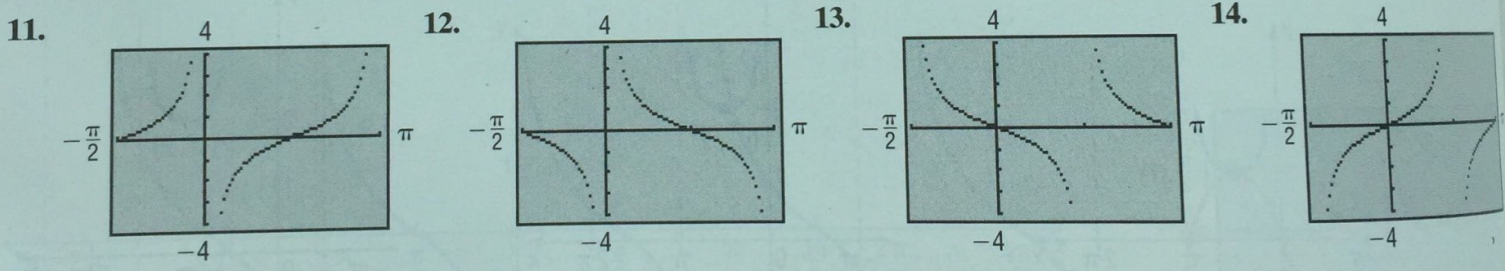
6.5 EXERCISES

In Problems 1–10, if necessary, refer to the graphs to answer each question.

1. What is the y-intercept of $y = \tan x$?
2. What is the y-intercept of $y = \cot x$?
3. What is the y-intercept of $y = \sec x$?
4. What is the y-intercept of $y = \csc x$?
5. For what numbers x , $-2\pi \leq x \leq 2\pi$, does $\sec x = 1$?
What about $\sec x = -1$?
6. For what numbers x , $-2\pi \leq x \leq 2\pi$, does $\csc x = 1$?
What about $\csc x = -1$?
7. For what numbers x , $-2\pi \leq x \leq 2\pi$, does the graph of $y = \sec x$ have vertical asymptotes?
8. For what numbers x , $-2\pi \leq x \leq 2\pi$, does the graph of $y = \csc x$ have vertical asymptotes?
9. For what numbers x , $-2\pi \leq x \leq 2\pi$, does the graph of $y = \tan x$ have vertical asymptotes?
10. For what numbers x , $-2\pi \leq x \leq 2\pi$, does the graph of $y = \cot x$ have vertical asymptotes?

In Problems 11–14, match each function to its graph.

- A. $y = -\tan x$ B. $y = \tan\left(x + \frac{\pi}{2}\right)$ C. $y = \tan(x + \pi)$ D. $y = -\tan\left(x - \frac{\pi}{2}\right)$



In Problems 15–29, use transformations to graph each function. Verify your results using a graphing utility.

15. $y = -\sec x$
16. $y = -\cot x$
17. $y = \sec\left(x - \frac{\pi}{2}\right)$
18. $y = \csc(x - \pi)$
19. $y = \tan(x - \pi)$
20. $y = \cot(x - \pi)$
21. $y = 3 \tan(2x)$
22. $y = 4 \tan\left(\frac{1}{2}x\right)$
23. $y = \sec(2x)$
24. $y = \csc\left(\frac{1}{2}x\right)$
25. $y = \cot(\pi x)$
26. $y = \cot(2x)$
27. $y = -3 \tan(4x)$
28. $y = -3 \tan(2x)$
29. $y = 2 \sec\left(\frac{1}{2}x\right)$
30. $y = 2 \sec(3x)$
31. $y = -3 \csc\left(x + \frac{\pi}{4}\right)$
32. $y = -2 \tan\left(x + \frac{\pi}{4}\right)$
33. $y = \frac{1}{2} \cot\left(x - \frac{\pi}{4}\right)$
34. $y = 3 \sec\left(x + \frac{\pi}{2}\right)$