

For each of the following functions, identify the domain and range of the "primary" phase and the period.

	Domain	Range	Period
1. sine	_____	_____	_____
2. cosine	_____	_____	_____
3. cosecant	_____	_____	_____
4. secant	_____	_____	_____
5. tangent	_____	_____	_____
6. cotangent	_____	_____	_____

Fill in the blank.

- To graph a secant or cosecant, you would first graph it's \_\_\_\_\_ function.  
(Hint: It's a word that starts with the letter "r".)
- The reciprocal of secant is \_\_\_\_\_.
- The reciprocal of cosecant is \_\_\_\_\_.
- Secant, cosecant, tangent, and cotangent all have undefined values that are represented by a(an) \_\_\_\_\_ on the graph.

Graph and identify the period, domain, range, and asymptotes.

11.  $y = 3 \csc\left(2x - \frac{\pi}{6}\right)$

12.  $y = \frac{1}{2} \sec\left(\frac{x}{3} + \frac{\pi}{4}\right)$

13.  $y = 3 \tan(2\theta - 40^\circ)$

14.  $y = \cot\left(\frac{x}{2} - \pi\right)$

15.  $y = 2 \cot(3\theta - 90^\circ) - 2$

16.  $y = -\csc\left(\frac{x}{3}\right)$

17.  $y = 2 \sec\left(\frac{x}{2} - \frac{\pi}{4}\right)$

18.  $y = -3 \tan(4x - \pi)$

## Answers

1. D:  $[0, 2\pi]$  R:  $[-1, 1]$  pd =  $2\pi$                       2. D:  $[0, 2\pi]$  R:  $[-1, 1]$  pd =  $2\pi$

3. D:  $(0, \pi) \cup (\pi, 2\pi)$  R:  $(-\infty, -1] \cup [1, \infty)$  pd =  $2\pi$

4. D:  $\left[0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{2}\right) \cup \left(\frac{3\pi}{2}, 2\pi\right]$  R:  $(-\infty, -1] \cup [1, \infty)$  pd =  $2\pi$

5. D:  $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$  R:  $(-\infty, \infty)$  pd =  $\pi$

6. D:  $(0, \pi)$  R:  $(-\infty, \infty)$  pd =  $\pi$

7. reciprocal

8. cosine

9. sine

10. asymptote

11. pd =  $\pi$  D:  $\left(\frac{\pi}{12}, \frac{7\pi}{12}\right) \cup \left(\frac{7\pi}{12}, \frac{13\pi}{12}\right)$  R:  $(-\infty, -3] \cup [3, \infty)$  asy @  $\frac{\pi}{12}, \frac{7\pi}{12}, \frac{13\pi}{12}$

12. pd =  $6\pi$  D:  $\left[-\frac{3\pi}{4}, \frac{3\pi}{4}\right) \cup \left(\frac{3\pi}{4}, \frac{15\pi}{4}\right) \cup \left(\frac{15\pi}{4}, \frac{21\pi}{4}\right]$  R:  $\left(-\infty, -\frac{1}{2}\right] \cup \left[\frac{1}{2}, \infty\right)$  asy @  $\frac{3\pi}{4}, \frac{15\pi}{4}$

13. pd =  $90^\circ$  D:  $(-25^\circ, 65^\circ)$  R:  $(-\infty, \infty)$  asy @  $-25^\circ, 65^\circ$

14. pd =  $2\pi$  D:  $(2\pi, 4\pi)$  R:  $(-\infty, \infty)$  asy @  $2\pi, 4\pi$