Graphing Tangent and Cotangent

$$y = atan[k(x-b)]$$
$$k > 0$$

Period $p = \frac{\pi}{k}$

Phase Shift b

Interval of One Cycle $=\left(b - \frac{\pi}{2k}, b + \frac{\pi}{2k}\right)$

Vertical Asymptotes $x = b - \frac{\pi}{2k}$ and $x = b + \frac{\pi}{2k}$

$$y = acot[k(x-b)]$$
$$k > 0$$

Period $p = \frac{\pi}{k}$

Phase Shift b

Interval of One Cycle $=\left(b, b + \frac{\pi}{2k}\right)$

Vertical Asymptotes $x = b$ and $x = b + \frac{\pi}{2k}$

Determine the period, phase shift, and interval of one cycle, vertical asymptotes

1. $y = cot(2x)$
2. $y = cot(4x)$
3. $y = tan(3x)$
4. $y = tan(5x)$
5. $y = -\cot\left(\frac{1}{2}x\right)$
6. $y = -cot\left(\frac{1}{3}x\right)$

7. $y = -\tan\left(\frac{1}{4}x\right)$

8. $y = -tan\left(\frac{1}{6}x\right)$

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

10. $y = tan\left(3x + \frac{\pi}{4}\right)$

11. $y = cot(4x + \pi)$

12. $y = \cot(6x - \pi)$

13. $y = -4tan\left[3\left(x - \frac{\pi}{2}\right)\right]$

14. $y = -3tan\left[2\left(x + \frac{\pi}{4}\right)\right]$

15. $y = \frac{1}{2}cot\left[\frac{1}{3}(x + \pi)\right]$

16. $y = \frac{3}{4}cot\left[\frac{1}{4}(x - \pi)\right]$

17. $y = -tan\left[\frac{1}{2}\left(x - \frac{\pi}{3}\right)\right]$

18. $y = -tan\left[\frac{1}{6}\left(x + \frac{\pi}{4}\right)\right]$