$y = f(x)$

Goal:

$y = af(bx+c)+d$

$y = f(x) + g(x)$

$y = af(bx)$

Multiplication always results in a stretch of the graph.

Constants applied outside the function affect it vertically, as we would expect. Constants applied inside the function affect it horizontally, opposite of what we would expect.

$$Amplitude = \frac{\max value - \min value}{2}$$

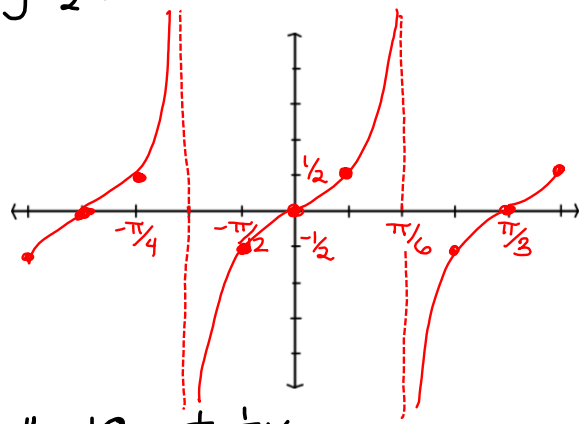
$$Amplitude = |a|$$

$$If\ a < 0, vertical\ flip$$

$$Period = \frac{original\ period\ (\pi\ or\ 2\pi)}{|b|}$$

$$If\ b < 0, horizontal\ flip$$

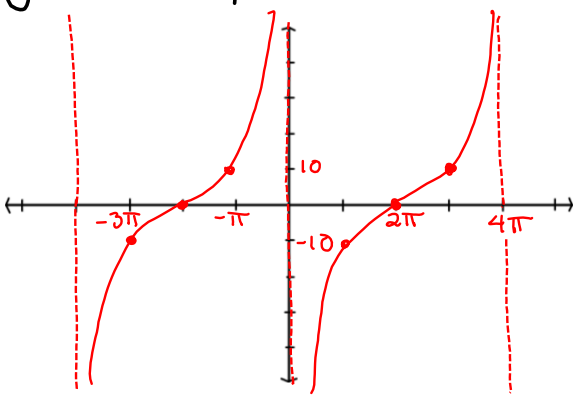
$y = \frac{1}{2}\tan 3x$



"amp": ½

per: $\frac{\pi}{3}$

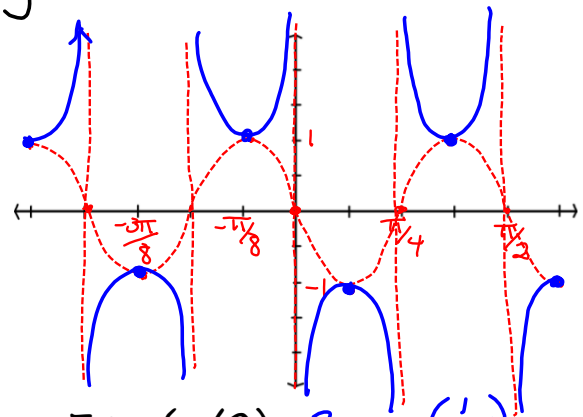
$y = -10\cot\frac{1}{4}x$



"amp" = 10
- vertical flip

period: $\frac{\pi}{1/4} = \frac{\pi}{1}\cdot\frac{4}{1} = 4\pi$

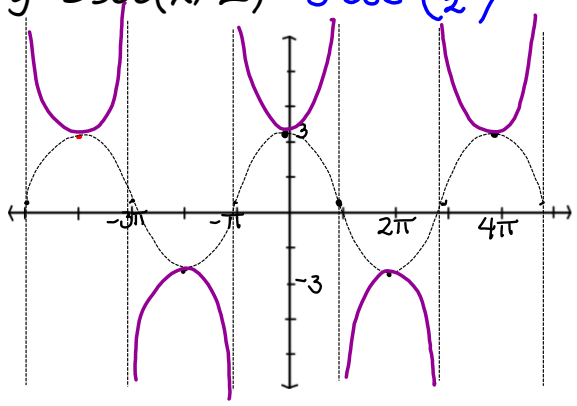
$y = -\csc(4x)$



amplitude of helper sine function = 1 (→ vertical flip)

period: $\frac{2\pi}{4} = \frac{\pi}{2}$

$y = 3\sec(x/2) = 3\sec\left(\frac{1}{2}x\right)$



"amp": 3

per: $\frac{2\pi}{1/2} = 2\pi\cdot\frac{2}{1} = 4\pi$