*factor b out to front

$f(x) = a \sin(bx - h) + K$ Period: $\frac{2\pi}{|b|}$

$f(x) = a \cos(bx - h) + K$ Amplitude: $|a|$

$\begin{bmatrix} f(x) = a \csc(bx - h) + K \\ f(x) = a \sec(bx - h) + K \end{bmatrix}$ a: If neg → reflection over x-axis

$|a| > 1$ → VS

$0 < |a| < 1$ → VC

→ no amplitude   h: +h → left

                                                     −h → right

                                              K: +K → up

                                                     −K → down

$f(x) = a \tan(bx - h) + K$ Period: $\frac{\pi}{|b|}$

$f(x) = a \cot(bx - h) + K$ amplitude: none

#1: Identify the period + amplitude of each

a) $y = -2 \sin(3x - \pi) + 1$ b) $y = 3 \tan(\frac{1}{5}x) + 5$

   Period: $2\pi/3$ Period: $\frac{\pi}{\frac{1}{5}} = \pi \cdot \frac{5}{1} = 5\pi$
   amp: $|-2| = 2$ amp: none

c) $f(x) = 5 \cos(8x + \pi)$ d) $g(x) = 2 \csc(4x + \pi/2)$

   Period: $\frac{2\pi}{8} = \frac{\pi}{4}$ Period: $\pi/2$
   amp: 5   Amp: none

#2: Identify the transformations

a) $f(\theta) = -2 \sin(3\theta + \pi)$ b) $y = \frac{1}{2} \tan(\theta - 2\pi) + 1$
   $-2 \sin(3(\theta + \underline{\pi/3}))$

   Reflect over x-axis   VC by $\frac{1}{2}$
   VS by 2   right 2π
   left $\pi/3$ up 1

VS by 2
left $\pi/3$

right 2π
Up 1