

Sketching Trigonometric Functions Exercise

[34 marks]

Name: Mihir

Date: _____

1. [6 marks] Sketch the graphs of the following on lined or graph paper.

(a) $y = \frac{1}{2} \tan\left(\theta + \frac{\pi}{4}\right)$ (b) $y = 3 \cos(2\theta + 6\pi)$ (c) $y = 2 \csc\left(\frac{\theta}{3}\right) - 2$

2. [18 marks] Write the transformations that are indicated in the equations, from the original trigonometric curve.

Equation	Amplitude or Stretch/Shrink	Period	Horizontal Phase Shift	Vertical Phase Shift
a) $y = 2 \tan \theta$	2	π	0	0
b) $y = \frac{1}{4} \sin(\theta - 2\pi) + 4$	$\frac{1}{4}$	2π	-2π (right)	4 up
c) $y = 5 \cos\left(\frac{5}{6}\theta\right) + \frac{1}{2}$ $y = 5 \cos\left(\frac{5}{6}(\theta)\right) + \frac{1}{2}$	5	$\frac{12\pi}{5}$	0	$\frac{1}{2}$ up
d) $y = 3 \cot \theta + 2$	3	π	0	2 up
e) $y = \frac{2}{3} \sec\left(\theta - \frac{2\pi}{3}\right)$	$\frac{2}{3}$	2π	$-\frac{2\pi}{3}$ (right)	0
f) $y = 4 \sin\left(\frac{\theta}{3} + \frac{2\pi}{9}\right)$	4	6π	$\frac{2\pi}{3}$ (left)	0

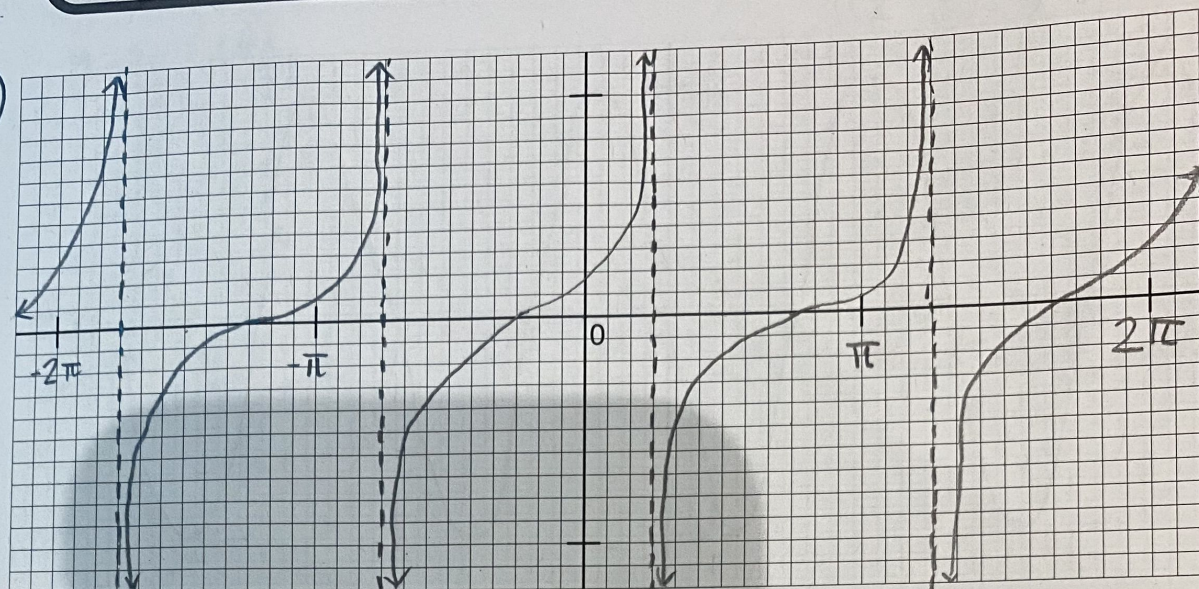
$$y = 4 \sin\left(\frac{1}{3}\left(\theta + \frac{2\pi}{3}\right)\right)$$

3. [10 marks] Write an equation for the function indicated and containing the following properties

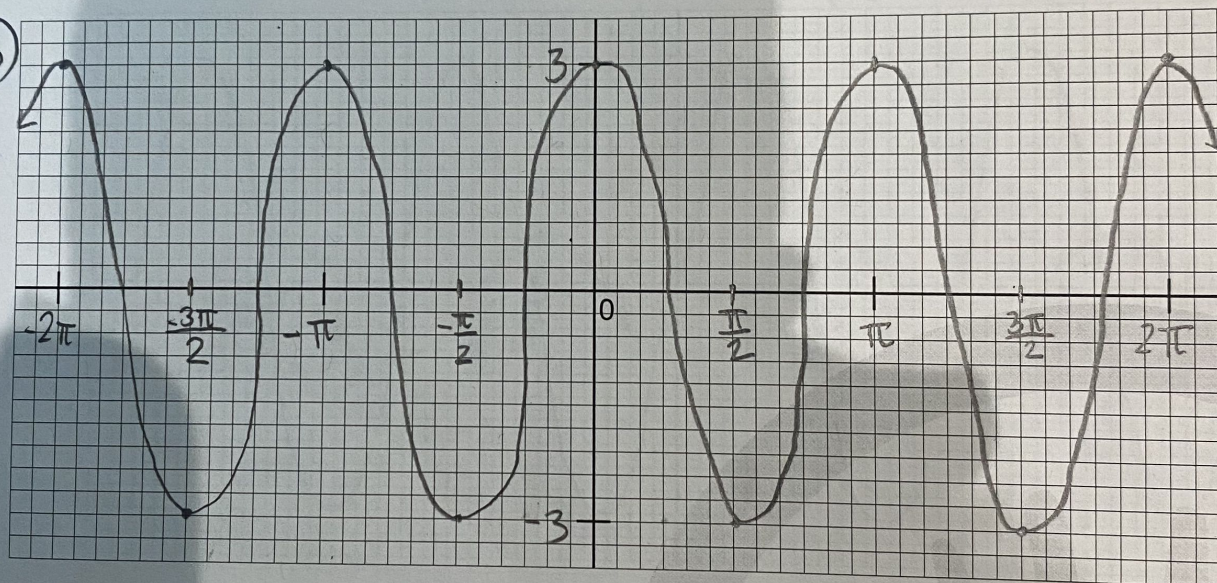
Function	Amplitude	Period	Horizontal Phase Shift	Vertical Phase Shift	Equation
sine	2	2π	$\pi/4$ left	2	$y = 2 \sin\left(\theta + \frac{\pi}{4}\right) + 2$
cosine	1	π	π right	1	$y = \cos(2(\theta - \pi)) + 1$
sine	$1/3$	3π	0	-3	$y = \frac{1}{3} \sin\left(\frac{2}{3}\theta\right) - 3$
tangent	no change	2π	$\pi/6$ left	-1	$y = \tan\left(\frac{1}{2}\left(\theta + \frac{\pi}{6}\right)\right) - 1$
cosine	3	$\pi/3$	$\pi/2$ right	0	$y = 3 \cos(6(\theta - \frac{\pi}{2}))$

Graphing Trigonometric Functions 2

1a)



b)



c)

