

Trig Graphing WS
Tangent Graphs

use

$$-\frac{\pi}{2}, \frac{\pi}{2}$$

$$-90^\circ, 90^\circ$$

Pos tan

Neg tan

Name Key

Graph one complete period for each function and give the period, and domain and range of that period.

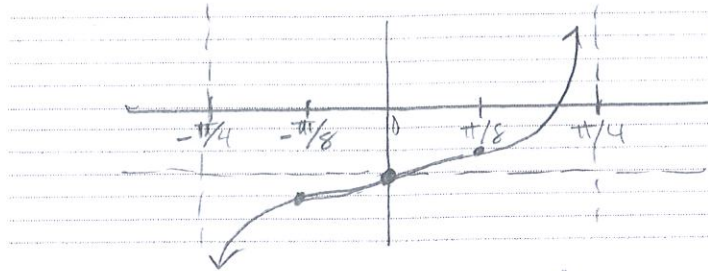
1) $y = -3 + \tan 2x$

$$y = \tan 2x - 3$$

$$\left(\frac{1}{2}\right) 2x = -\frac{\pi}{2} \left(\frac{1}{2}\right) \quad 2x = \frac{\pi}{2} \left(\frac{1}{2}\right)$$

$$x = -\frac{\pi}{4}$$

$$x = \frac{\pi}{4}$$



$$D: \left(-\frac{\pi}{4}, \frac{\pi}{4}\right)$$

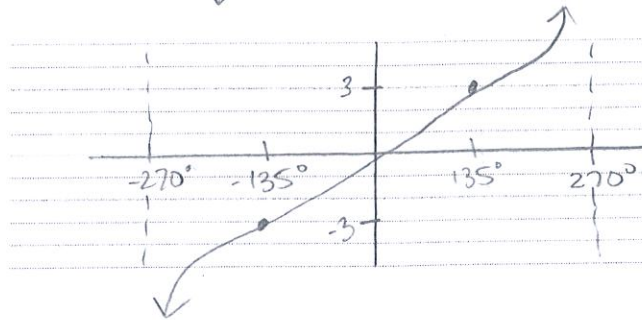
$$R: (-\infty, \infty)$$

$$\text{Period} = \frac{\pi}{4} - \left(-\frac{\pi}{4}\right) = \frac{\pi}{2}$$

2) $y = 3 \tan \frac{\theta}{3}$

$$\frac{\theta}{3} = -90^\circ \quad \frac{\theta}{3} = 90^\circ$$

$$\theta = -270^\circ \quad \theta = 270^\circ$$



$$D: (-270^\circ, 270^\circ)$$

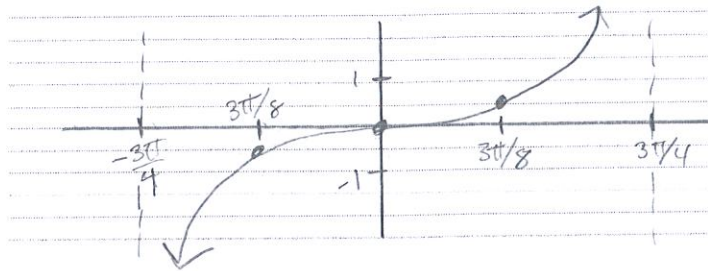
$$R: (-\infty, \infty)$$

$$\text{Period} = 270^\circ - (-270^\circ) = 540^\circ$$

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

$$\left(\frac{3}{2}\right) \frac{2x}{3} = -\frac{\pi}{2} \left(\frac{3}{2}\right) \quad \frac{2x}{3} = \frac{\pi}{2} \left(\frac{3}{2}\right)$$

$$x = -\frac{3\pi}{4} \quad x = \frac{3\pi}{4}$$



$$D: \left(-\frac{3\pi}{4}, \frac{3\pi}{4}\right)$$

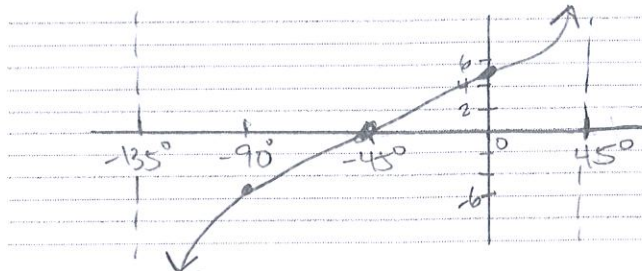
$$R: (-\infty, \infty)$$

$$\text{Period} = \frac{3\pi}{4} - \left(-\frac{3\pi}{4}\right) = \frac{6\pi}{4} = \frac{3\pi}{2}$$

4) $y = 5 \tan(\theta + 45^\circ)$

$$\theta + 45^\circ = -90^\circ \quad \theta + 45^\circ = 90^\circ$$

$$\theta = -135^\circ \quad \theta = 45^\circ$$



$$D: (-135^\circ, 45^\circ)$$

$$R: (-\infty, \infty)$$

$$\text{Period} = 45^\circ - (-135^\circ) = 180^\circ$$

$$\frac{180}{4} = 45^\circ \quad -135 + 45 = -90$$

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

$$2x - \frac{\pi}{2} = -\frac{\pi}{2} \quad 2x - \frac{\pi}{2} = \frac{\pi}{2}$$

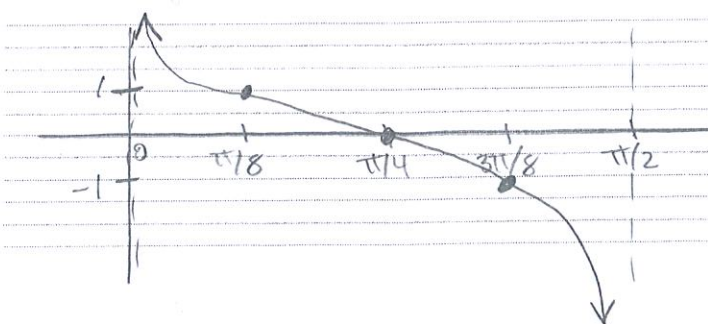
$$2x = -\frac{\pi}{2} + \frac{\pi}{2} \quad 2x = \frac{\pi}{2} + \frac{\pi}{2}$$

$$2x = 0$$

$$x = 0$$

$$2x = \frac{2\pi}{2}$$

$$2x = \pi$$



$$D: \left(0, \frac{\pi}{2}\right)$$

$$R: (-\infty, \infty)$$

$$\text{Period} = \frac{\pi}{2}$$