Trig Graphing WS
All Trig Graphs

Name Key

Graph one complete period for each function and give the domain and range (in interval notation) of that period.

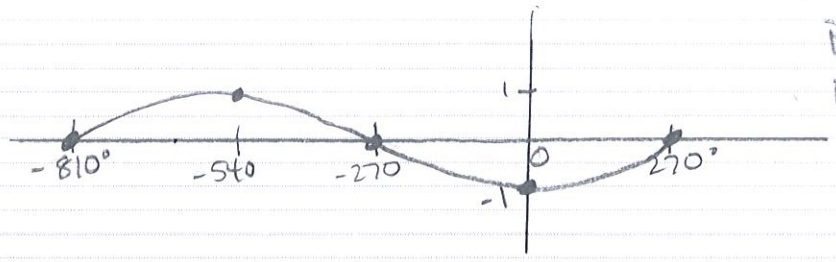
1) $y = \sin\left(\frac{\theta}{3} + 270°\right)$

$\frac{\theta}{3} + 270 = 0$ $\frac{\theta}{3} + 270 = 360$

$\frac{\theta}{3} = -270$ $\frac{\theta}{3} = 90$

$\theta = -810°$ $\theta = 270°$

Period $= 270 - 810 = 1080°$ $\frac{1080}{4} = 270°$



P: 1080°
D: [-810, 270°]
R: [-1, 1]

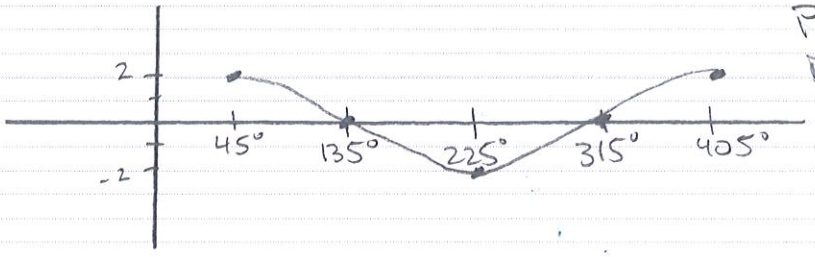
2) $y = 2\cos(\theta - 45°)$

$\theta - 45 = 0$ $\theta - 45 = 360°$

$\theta = 45°$ $\theta = 405°$

$405 - 45 = 360$

$\frac{360}{4} = 90°$



P: 360°
D: [45, 405]
R: [-2, 2]

3) $y = -3\csc(3x + \pi)$ sin

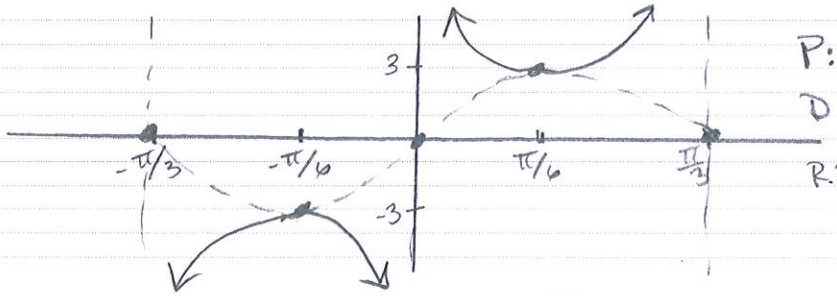
Reflect

$3x + \pi = 0$ $3x + \pi = 2\pi$

$3x = -\pi$ $3x = \pi$

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

Period $= \frac{\pi}{3} - -\frac{\pi}{3} = \frac{2\pi}{3}$



P: $\frac{2\pi}{3}$
D: $(-\frac{\pi}{3}, 0) \cup (0, \frac{\pi}{3})$
R: $(-\infty, -3] \cup [3, \infty)$

4) $y = 2\sec\left(\frac{1}{2}x + \frac{\pi}{4}\right)$ cos

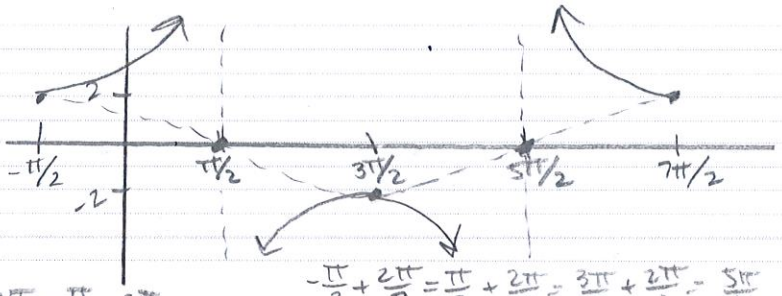
$\frac{1}{2}x + \frac{\pi}{4} = 0$ $\frac{1}{2}x + \frac{\pi}{4} = 2\pi$

$(2)\frac{1}{2}x = -\frac{\pi}{4}(2)$ $\frac{1}{2}x = \frac{8\pi}{4} - \frac{\pi}{4}$

$x = -\frac{\pi}{2}$ $x = \frac{7\pi}{4} \cdot 2$

$x = \frac{7\pi}{2}$

Period $\frac{2\pi}{2} - -\frac{\pi}{2} = \frac{8\pi}{2} = 4\pi$



$-\frac{\pi}{2} + \frac{2\pi}{2} = \frac{\pi}{2} + \frac{2\pi}{2} = \frac{3\pi}{2} + \frac{2\pi}{2} = \frac{5\pi}{2}$

P: 4π
D: $[-\frac{\pi}{2}, \frac{\pi}{2}) \cup (\frac{\pi}{2}, \frac{5\pi}{2}) \cup (\frac{5\pi}{2}, \frac{7\pi}{2}]$
R: $(-\infty, -2] \cup [2, \infty)$

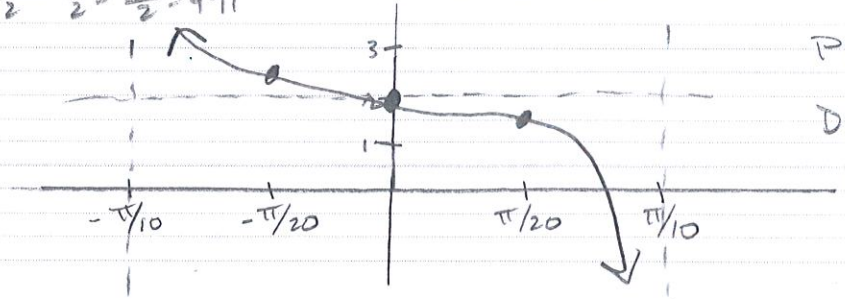
5) $y = -\frac{1}{2}\tan(5x) + 2$

Reflect

$5x = -\frac{\pi}{2}$ $5x = \frac{\pi}{2}$

$x = -\frac{\pi}{10}$ $x = \frac{\pi}{10}$

Period $= \frac{\pi}{10} - -\frac{\pi}{10} = \frac{2\pi}{10} = \frac{\pi}{5}$



P: $\frac{\pi}{5}$
D: $(-\frac{\pi}{10}, \frac{\pi}{10})$
R: $(-\infty, \infty)$

6) $y = \cot(3\theta + 45°)$

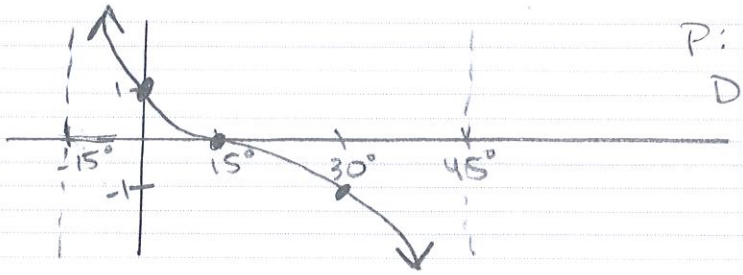
$3\theta + 45 = 0$ $\quad 3\theta + 45 = 180$

$3\theta = -45$ $\quad 3\theta = 135$

$\theta = -15°$ $\quad \theta = 45°$

Period $= 45 - -15 = 60°$

$\frac{60}{4} = 15°$



P: 60°

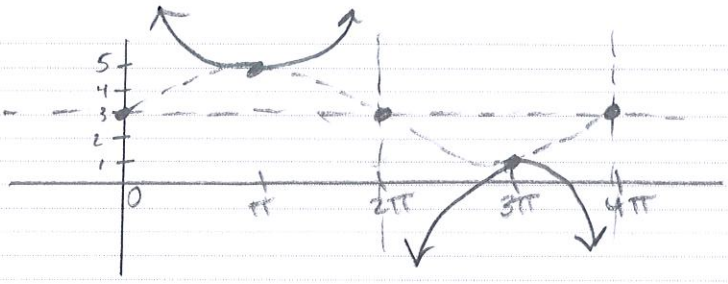
D: $(-15°, 45°)$

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

7) $y = 2\csc\frac{x}{2} + 3$ VS

$\frac{x}{2} = 0$ $\quad \frac{x}{2} = 2\pi$

$x = 0$ $\quad x = 4\pi$



P: 4π

D: $(0, 2\pi) \cup (2\pi, 4\pi)$

R: $(-\infty, 1] \cup [5, \infty)$

8) $y = \tan(3\theta + 90°) - 1$

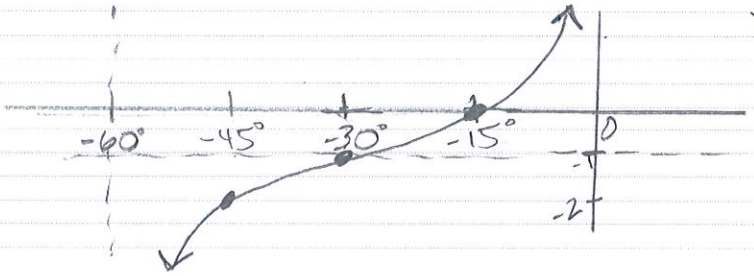
$3\theta + 90 = -90$ $\quad 3\theta + 90 = 90$

$3\theta = -180$ $\quad 3\theta = 0$

$\theta = -60°$ $\quad \theta = 0°$

Period $= 0 - -60° = 60°$

$\frac{60}{4} = 15$



P: 60°

D: $(-60°, 0°)$

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

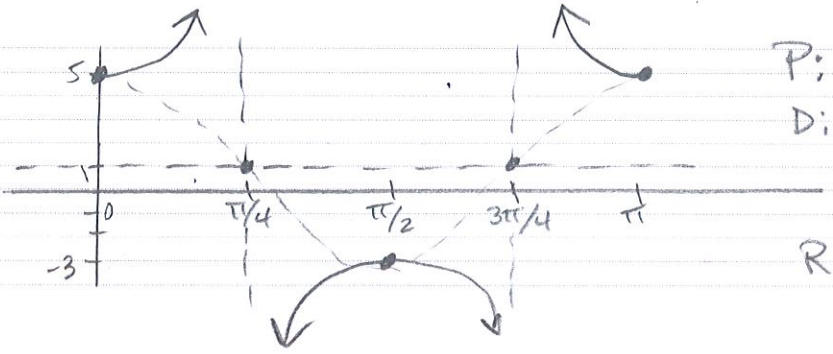
9) $y = 4\sec(2x) + 1$

$2x = 0$ $\quad 2x = 2\pi$

$x = 0$ $\quad x = \pi$

Period $= \pi$

$\frac{\pi}{4}$



P: π

D: $[0, \frac{\pi}{4}) \cup (\frac{\pi}{4}, \frac{3\pi}{4}) \cup (\frac{3\pi}{4}, \pi]$

R: $(-\infty, -3] \cup [5, \infty)$

10) $y = -3\sin(\theta - 45°)$

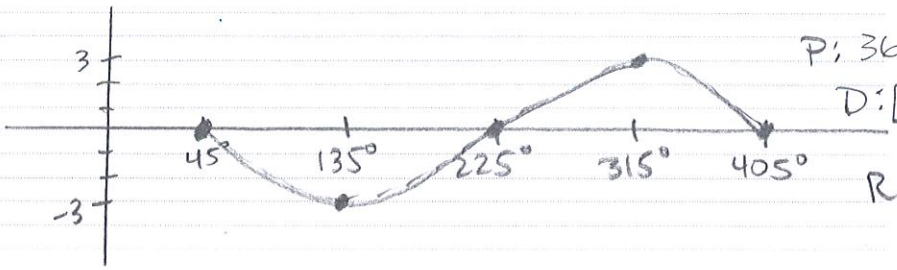
Reflect

$\theta - 45 = 0$ $\quad \theta - 45 = 360$

$\theta = 45°$ $\quad \theta = 405°$

$405 - 45 = 360$

$\frac{360}{4} = 90$



P: 360°

D: $[45°, 315°]$

R: $[-3, 3]$