Trig Graphing WS
Secant Graphs

Name Key

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

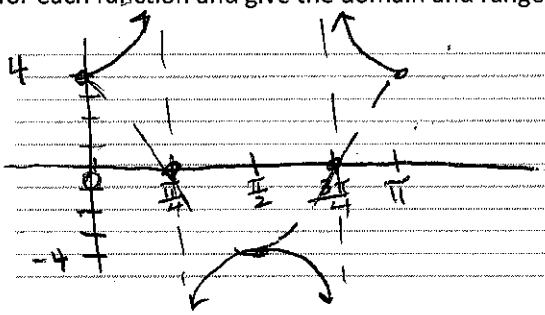
1) $y = 4\sec 2x$

→ $2x = 0$ $2x = 2\pi$

$x = 0$ $x = \pi$

→ Graph Cos

→ Period = π



Domain: $[0, \pi/4) \cup (\pi/4, 3\pi/4) \cup (3\pi/4, \pi]$

Range: $(-\infty, -4] \cup [4, \infty)$

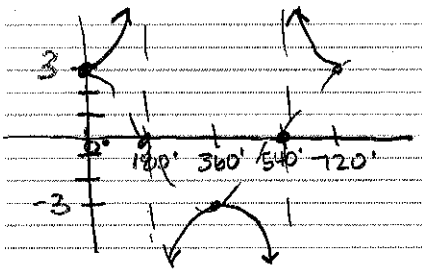
2) $y = 3\sec\frac{\theta}{2}$

→ $\frac{\theta}{2} = 0$ $\frac{\theta}{2} = 360$

$\theta = 0°$ $\theta = 720°$

→ Graph Cos

→ Period = 720°



Domain: $[0°, 180°) \cup (180°, 540°) \cup (540°, 720°]$

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

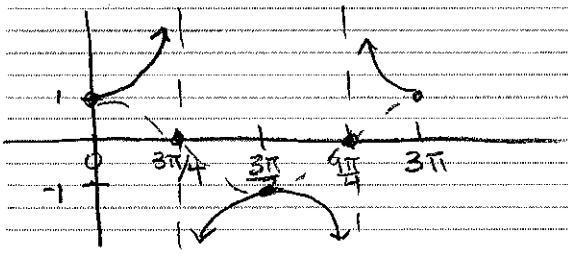
3) $y = \sec\frac{2x}{3}$

→ $\frac{2}{3}x = 0$ $\frac{3}{2}\cdot\frac{2}{3}x = 2\pi \cdot \frac{3}{2}$

$x = 0$ $x = 3\pi$

→ Graph Cos

→ Period = 3π



Domain: $[0, \frac{3\pi}{4}) \cup (\frac{3\pi}{4}, \frac{9\pi}{4}) \cup (\frac{9\pi}{4}, 3\pi]$

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

4) $y = -2\sec(4\theta) - 2$

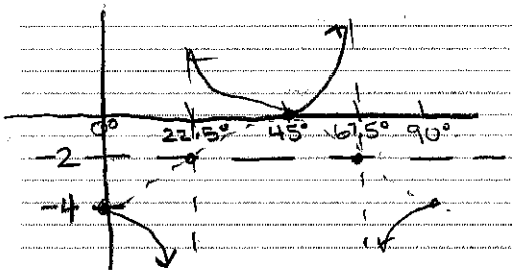
→ $4\theta = 0$ $4\theta = 360$

$\theta = 0°$ $\theta = 90°$

→ Graph cos

→ Reflect x-axis

→ Period = 90°



Domain: $[0°, 22.5°) \cup (22.5°, 67.5°) \cup (67.5°, 90°]$

Range: $(-\infty, -4] \cup [0, \infty)$

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

→ $\frac{x}{2} + \frac{\pi}{2} = 0$ $\frac{x}{2} + \frac{\pi}{2} = 2\pi$

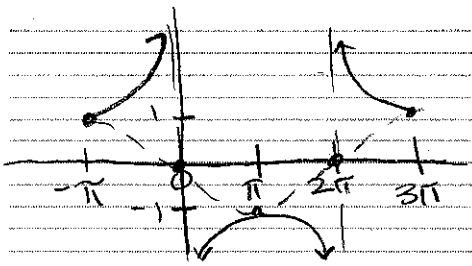
$2\cdot\frac{x}{2} = -\frac{\pi}{2}\cdot 2$ $\frac{x}{2} = 1\frac{1}{2}\pi$

$x = -\pi$ $2\cdot\frac{x}{2} = \frac{3\pi}{2}\cdot 2$

$x = 3\pi$

Period = $3\pi - -\pi = 4\pi$

→ Graph cos



Domain: $[-\pi, 0) \cup (0, 2\pi) \cup (2\pi, 3\pi]$

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