

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

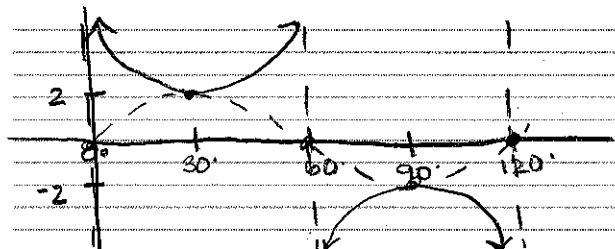
1) $y = 2\csc 3\theta$

$\rightarrow 3\theta = 0^\circ \quad 3\theta = 360^\circ$

$\theta = 0^\circ \quad \theta = 120^\circ$

\rightarrow Graph sin

\rightarrow Period = 120°



Domain: $(0^\circ, 60^\circ) \cup (60^\circ, 120^\circ)$

Range: $(-\infty, -2] \cup [2, \infty)$

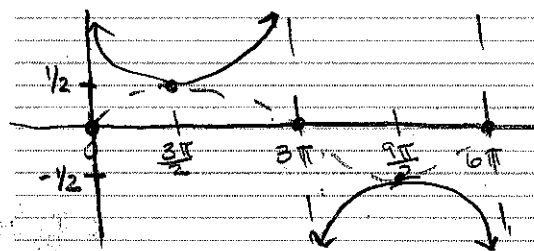
2) $y = \frac{1}{2}\csc \frac{x}{3}$

$\rightarrow \frac{x}{3} = 0 \quad \frac{x}{3} = 2\pi$

$x = 0 \quad x = 6\pi$

\rightarrow Graph sin

\rightarrow Period = 6π



Domain: $(0, 3\pi) \cup (3\pi, 6\pi)$

Range: $(-\infty, -\frac{1}{2}] \cup [\frac{1}{2}, \infty)$

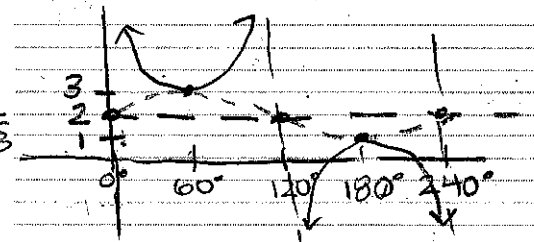
3) $y = \csc \frac{3\theta}{2} + 2$

$\frac{3\theta}{2} = 0 \quad \frac{3\theta}{2} = 360^\circ \cdot \frac{2}{3}$

$\theta = 0^\circ \quad \theta = 240^\circ$

\rightarrow Graph sin

\rightarrow Period = 240°



Domain: $(0^\circ, 120^\circ) \cup (120^\circ, 240^\circ)$

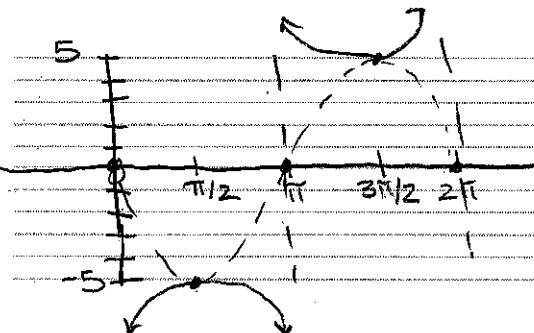
Range: $(-\infty, 1] \cup [3, \infty)$

4) $y = -5\csc x$

\rightarrow Graph sin

\rightarrow Reflect x-axis

\rightarrow Period = 2π



Domain: $(0, \pi) \cup (\pi, 2\pi)$

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

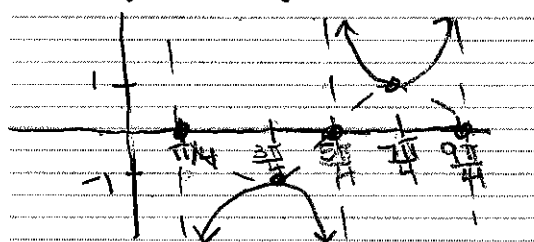
5) $y = -\csc\left(x - \frac{\pi}{4}\right)$

$\rightarrow x - \frac{\pi}{4} = 0 \quad x - \frac{\pi}{4} = 2\pi$

$x = \frac{\pi}{4} \quad x = 2\frac{1}{4}\pi$

$x = \frac{9\pi}{4}$

Period = $\frac{9\pi}{4} - \frac{\pi}{4} = \frac{8\pi}{4} = 2\pi \checkmark$



Domain: $(\frac{\pi}{4}, \frac{5\pi}{4}) \cup (\frac{5\pi}{4}, \frac{9\pi}{4})$

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

\rightarrow Graph sin

\rightarrow Reflect x-axis