

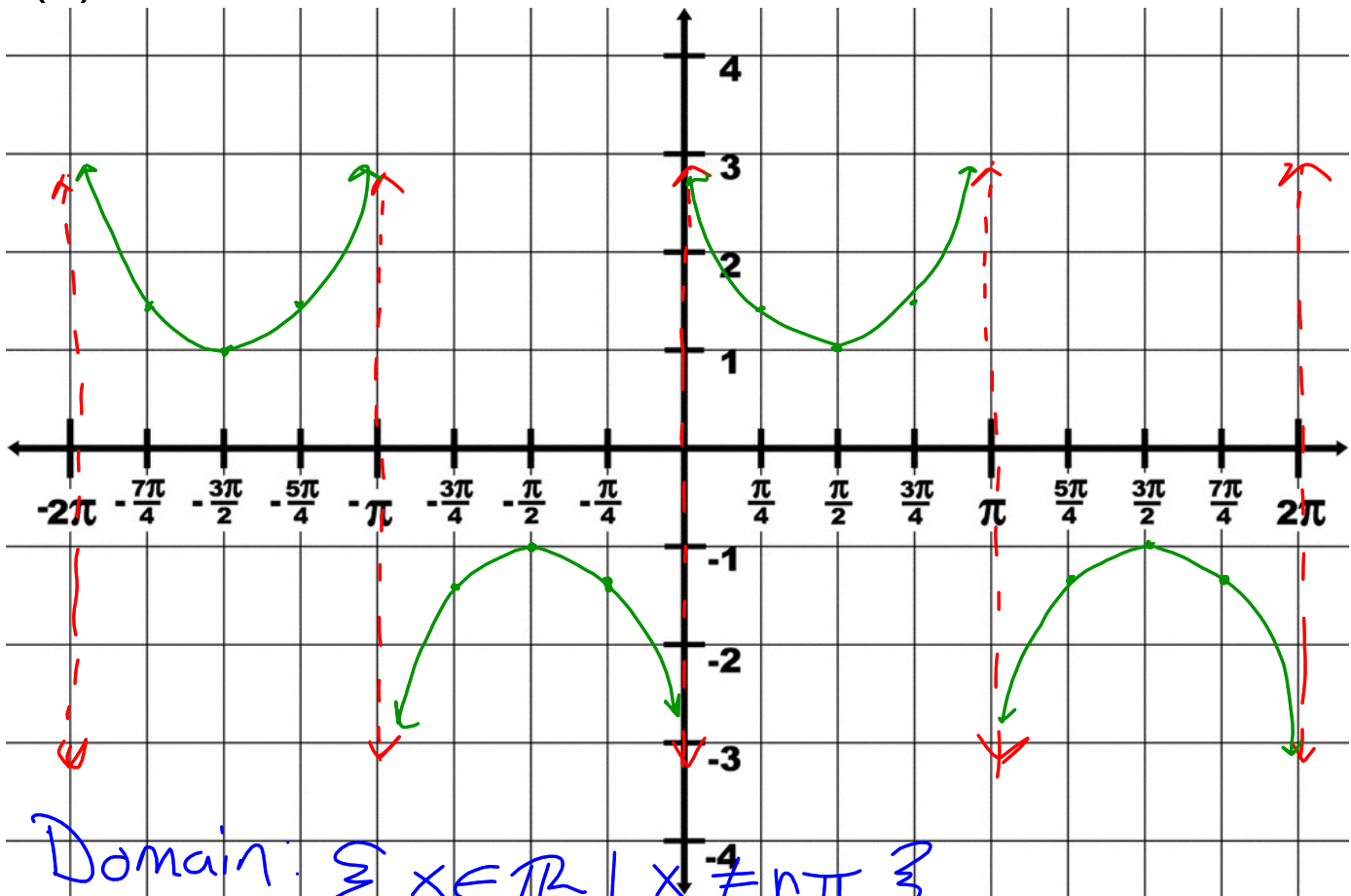
Warm-up

1. Identify amplitude, phase change, midline, period, frequency, domain and range for the following.

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

2. Graph

$$f(x) = \text{Csc } x$$



Domain: $\{x \in \mathbb{R} \mid x \neq n\pi\}$

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

Amp: none

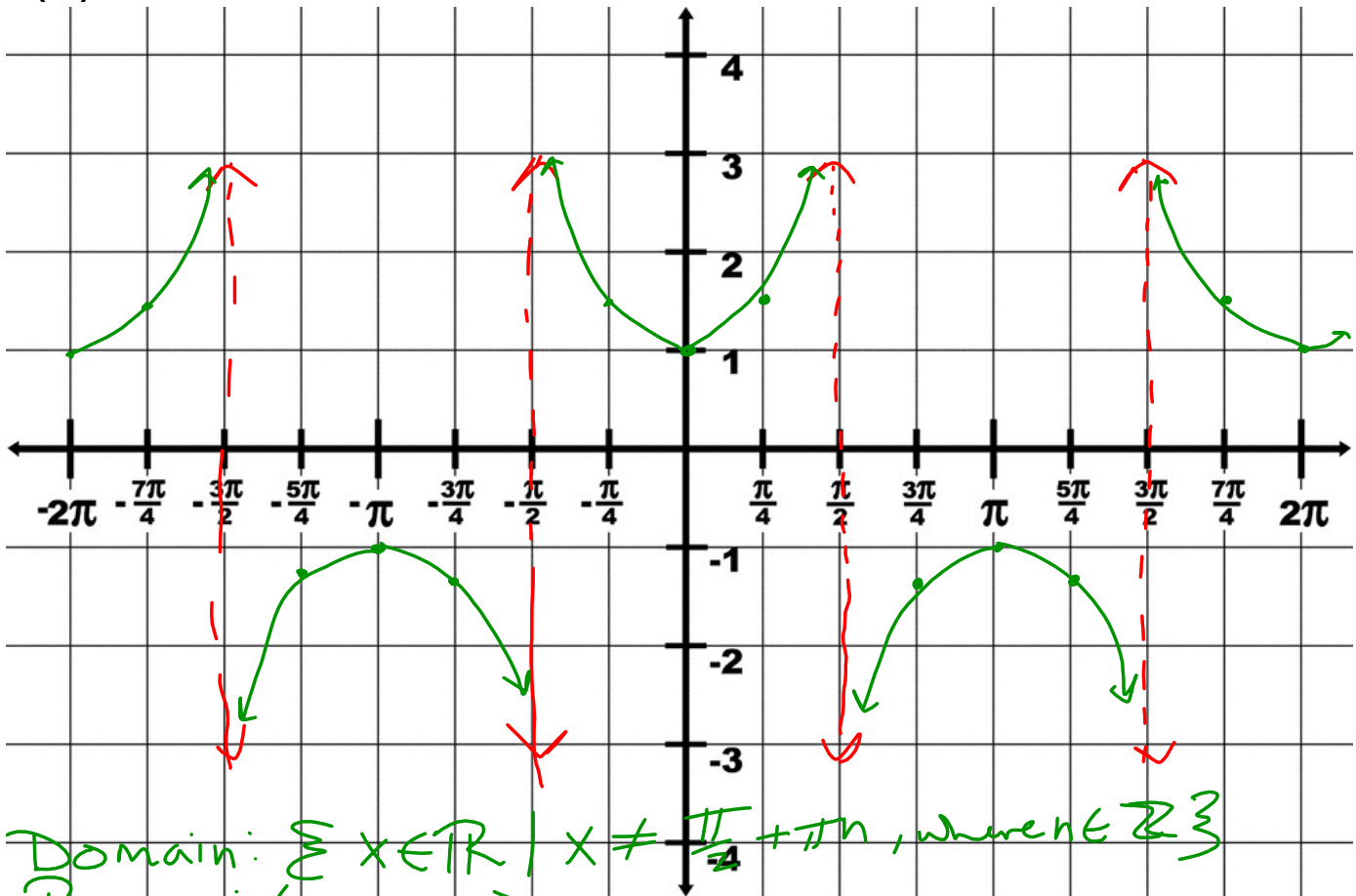
Period: 2π

Frequency: $\frac{1}{2\pi}$

midline: none

Asymptotes: $x = n\pi$, where $n \in \mathbb{Z}$

$$f(x) = \sec x$$



Domain: $\{x \in \mathbb{R} \mid x \neq \frac{\pi}{2} + n\pi, \text{ where } n \in \mathbb{Z}\}$

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

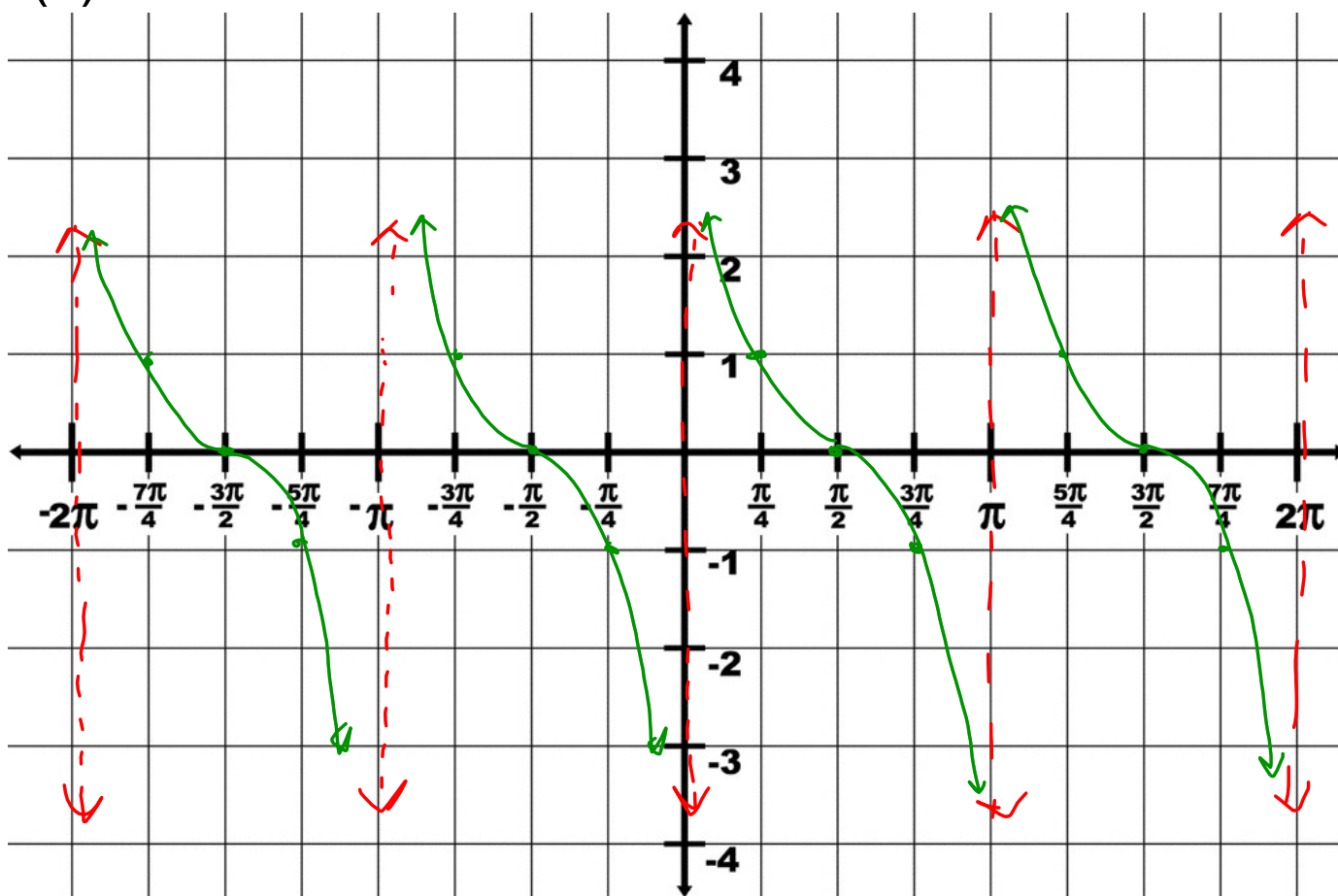
midline: $y = 0$

Amp: None

Period: 2π

Asymptote: $x = \frac{\pi}{2} + n\pi$

$$f(x) = \text{Cot } x$$



$$y = 3 \csc \frac{1}{2} \theta$$

Domain: $\{ x \in \mathbb{R} \mid x \neq 0 + 2\pi n \}$
where $n \in \mathbb{Z}$

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

Phase shift: None

midline: $y = 0$

asymptotes: $x = 2\pi n$

3 specific Asymptotes: $x = -2\pi, 0, 2\pi$

Period: 4π

$$y = \frac{1}{2} \tan(\theta - 30^\circ) + 2$$

Vertical Translation + 2

Identify the Transformations:

Vertical Compression of $\frac{1}{2}$, Translation Horizontally + 30°

Domain:

$$\{x \in \mathbb{R} \mid x \neq 120^\circ + 180^\circ n, \text{ where } n \in \mathbb{Z}\}$$

Range:

$$(-\infty, \infty)$$

$$y = \sec(3\theta + 6\pi) - \frac{1}{3}$$