

# Advanced Math

pg 423

$$9) y = \frac{1}{3} \tan x$$

$$\text{period} = \pi$$

$$\text{p.s.} = \text{None}$$

$$\text{amp} = \text{None}$$

$$\text{domain} = \mathbb{R} \text{ except } \left\{ \frac{\pi}{2} + \pi n, n \in \mathbb{Z} \right\}$$

$$\text{range} = \mathbb{R}$$

$$11) y = \tan 2x$$

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

$$\text{p.s.} = \text{None}$$

$$\text{amp} = \text{None}$$

$$\text{domain} = \mathbb{R} \text{ except } \left\{ \frac{\pi}{4} + \frac{\pi}{2}n, n \in \mathbb{Z} \right\}$$

$$\text{range} = \mathbb{R}$$

$$13) y = -\frac{1}{2} \sec x$$

$$\text{pd} = 2\pi$$

$$\text{p.s.} = \text{None}$$

$$\text{amp} = \text{None}$$

$$\text{domain} = \mathbb{R} \text{ except } \left\{ \frac{\pi}{2} + \pi n, n \in \mathbb{Z} \right\}$$

$$\text{range} = (-\infty, -\frac{1}{2}] \cup [\frac{1}{2}, \infty)$$

$$15) y = \sec \pi x$$

$$\text{pd} = 2$$

$$\text{p.s.} = \text{None}$$

$$\text{amp} = \text{None}$$

$$\text{domain} = \mathbb{R} \text{ except } \left\{ \frac{1}{2} + n, n \in \mathbb{Z} \right\}$$

$$\text{range} = (-\infty, -1] \cup [1, \infty)$$

$$17) y = \sec \pi x - 1$$

$$\text{pd} = 2$$

$$\text{p.s.} = \text{None}$$

$$\text{amp} = \text{None}$$

$$\text{domain} = \mathbb{R} \text{ except } \left\{ \frac{1}{2} + n, n \in \mathbb{Z} \right\}$$

$$\text{range} = (-\infty, -2] \cup [0, \infty)$$

$$19) y = \csc \frac{x}{2}$$

$$\text{pd} = 4\pi$$

$$\text{p.s.} = \text{None}$$

$$\text{amp} = \text{None}$$

$$\text{domain} = \mathbb{R} \text{ except } \left\{ 0 + 2\pi n, n \in \mathbb{Z} \right\}$$

$$\text{range} = (-\infty, -1] \cup [1, \infty)$$

$$21) y = \cot \frac{x}{2}$$

$$\text{pd} = 2\pi$$

$$\text{p.s.} = \text{None}$$

$$\text{amp} = \text{None}$$

$$\text{domain} = \mathbb{R} \text{ except } \left\{ 0 + 2\pi n, n \in \mathbb{Z} \right\}$$

$$\text{range} = \mathbb{R}$$

$$23) y = \frac{1}{2} \sec 2x$$

$$\text{pd} = \pi$$

$$\text{p.s.} = \text{None}$$

$$\text{amp} = \text{None}$$

$$\text{domain} = \mathbb{R} \text{ except } \left\{ \frac{\pi}{4} + \frac{\pi}{2}n, n \in \mathbb{Z} \right\}$$

$$\text{range} = (-\infty, -\frac{1}{2}] \cup [\frac{1}{2}, \infty)$$

$$25) y = \tan \frac{\pi x}{4}$$

$$pd = 4$$

p.s.: None

amp: None

domain:  $\mathbb{R}$  except  $\{2 + 4n, n \in \mathbb{Z}\}$

range  $\mathbb{R}$

$$27) y = \csc(\pi - x)$$

$$pd = 2\pi$$

p.s. =  $\pi$

amp: None

domain:  $\mathbb{R}$  except  $\{\pi + \pi n, n \in \mathbb{Z}\}$

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

$$29) y = \frac{1}{4} \csc\left(x + \frac{\pi}{4}\right)$$

$$pd = 2\pi$$

$$p.s. = -\frac{\pi}{4}$$

amp: None

domain:  $\mathbb{R}$  except  $\{-\frac{\pi}{4} + \pi n, n \in \mathbb{Z}\}$

range:  $(-\infty, -\frac{1}{4}] \cup [\frac{1}{4}, \infty)$