Graphing Trig Functions

1) <u>Sine Curve</u>

$y = \sin x$
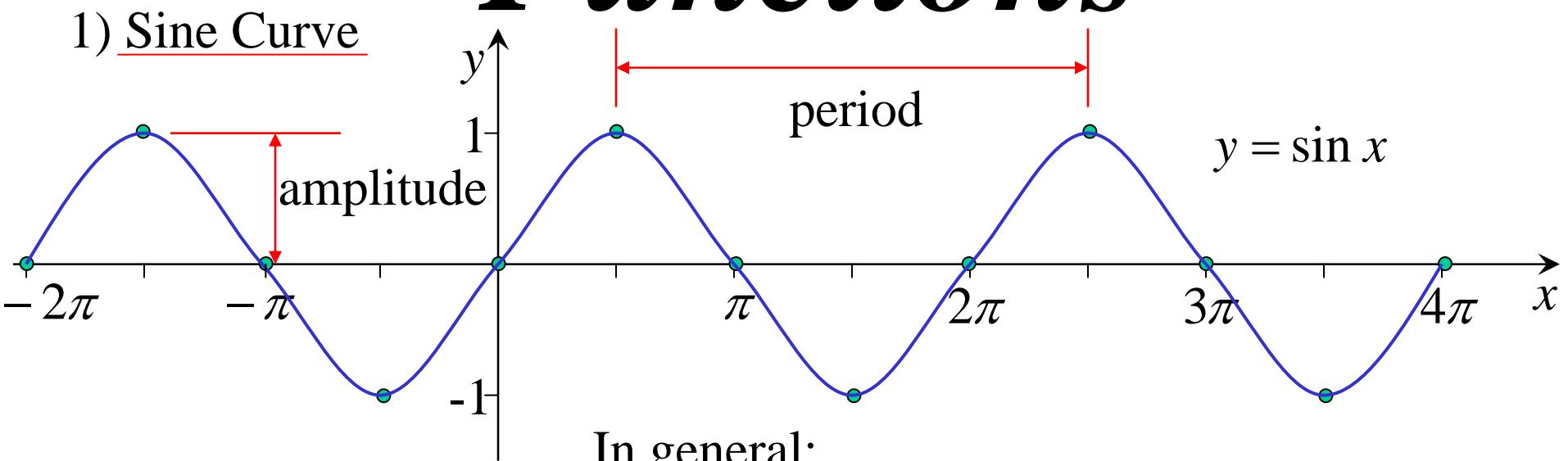
amplitude

period

domain : all real x

range : $-1 \le y \le 1$

In general;

$y = a\sin(bx + c)$

$period = \dfrac{2\pi}{b}$ units

$amplitude = a$ units

$divisions = \dfrac{period}{4}$

$shift = \dfrac{c}{b}$ to left

e.g. $y = 5\sin\left(9x - \dfrac{\pi}{2}\right)$

$\text{period} = \dfrac{2\pi}{9} \text{ units}$ $\text{divisions} = \dfrac{\pi}{18}$

$\text{amplitude} = 5 \text{ units}$ $\text{shift} = \dfrac{\pi}{18} \text{ to right}$

$y = 5\sin\left(9x - \dfrac{\pi}{2}\right)$
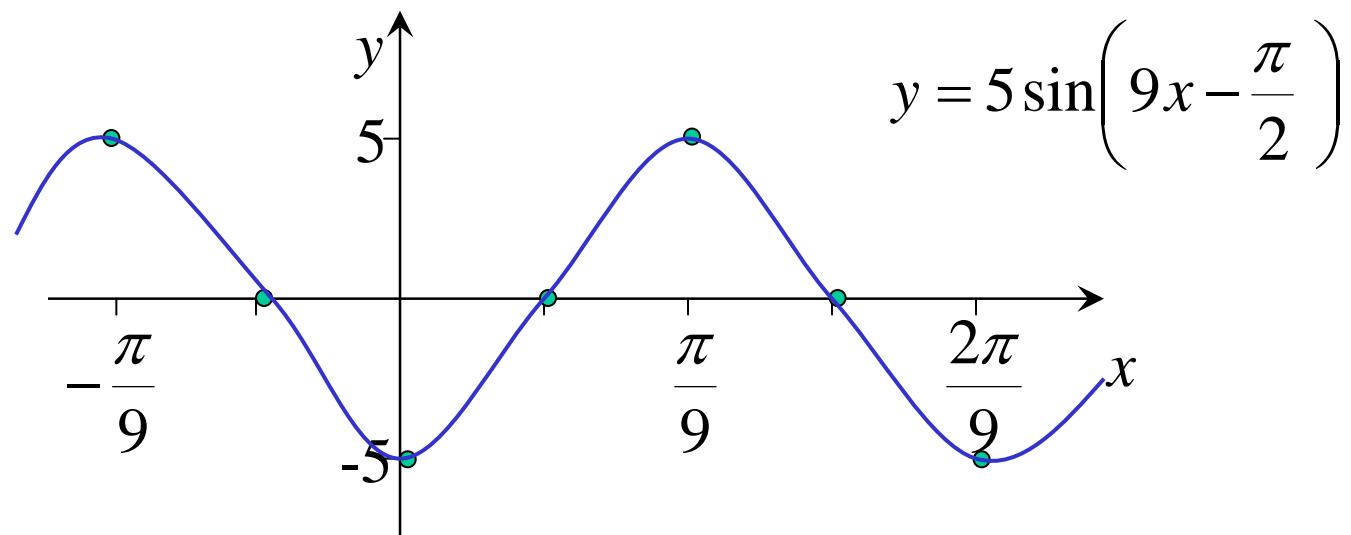
2) <u>Cosine Curve</u>

$$y = a\cos(bx + c)$$

$$\text{period} = \frac{2\pi}{b} \text{ units}$$

$$\text{amplitude} = a \text{ units}$$

$$\text{divisions} = \frac{\text{period}}{4}$$

$$\text{shift} = \frac{c}{b} \text{ to left}$$

e.g. $y = -4\cos\left(\dfrac{x}{8} + \pi\right) + 2$ $\text{period} = \dfrac{2\pi}{\dfrac{1}{8}}$ $\text{divisions} = 4\pi$

$$= 16\pi$$

$$\text{amplitude} = 4$$

$\text{shift} = 8\pi$ to left, 2 up, upside down
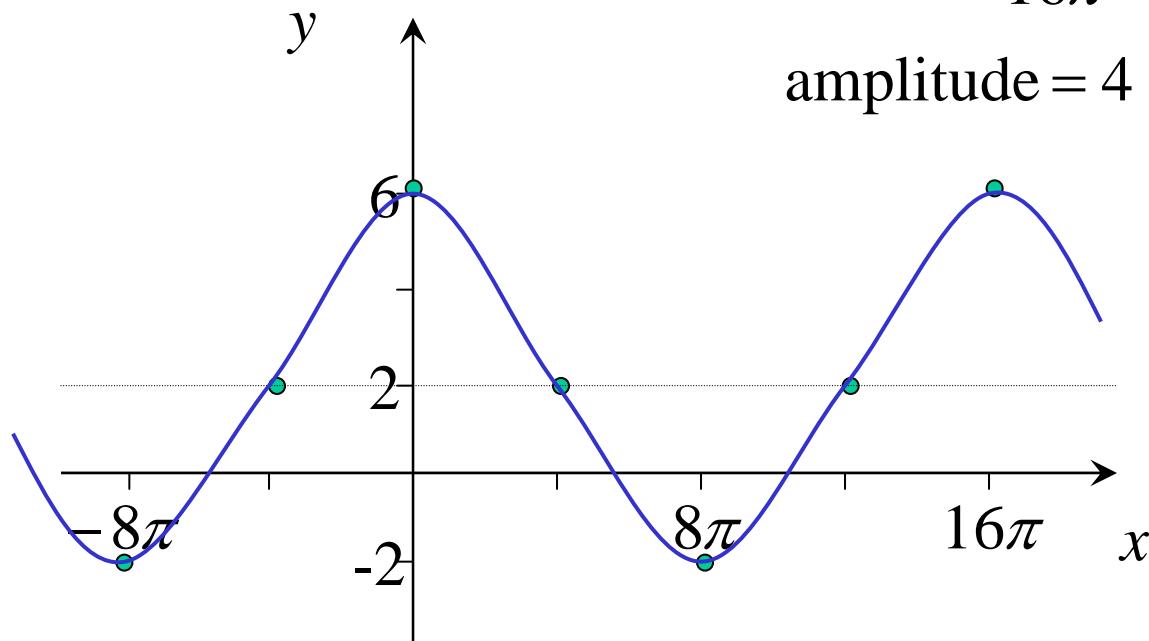
$$y = -4\cos\left(\frac{x}{8} + \pi\right) + 2$$

3) <u>Tangent Curve</u>

$$y = a\tan(bx + c)$$

$$\text{period} = \frac{\pi}{b}\text{ units}$$

$$\text{divisions} = \frac{\text{period}}{2}$$

$$\text{shift} = \frac{c}{b}\text{ to left}$$

e.g. $y = e\tan(\pi x - 2\pi)$

$$\text{period} = \frac{\pi}{\pi}$$
$$= 1$$

$$\text{divisions} = \frac{1}{2}$$
$$\text{shift} = 2\text{ to right}$$
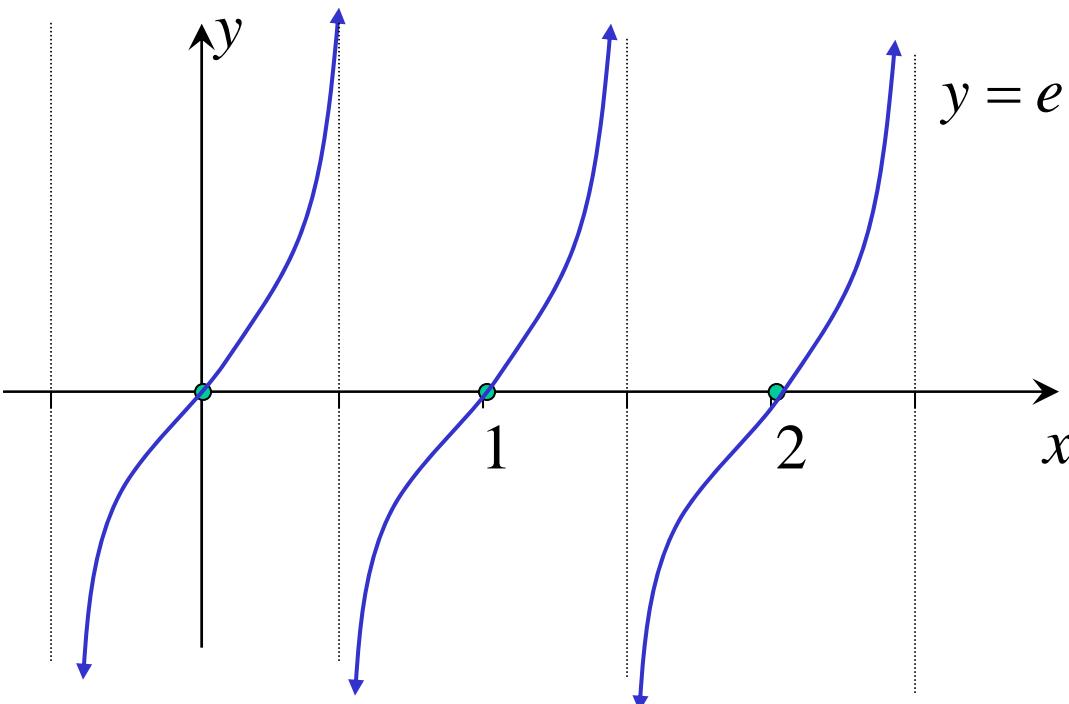
$$y = e\tan(\pi x - 2\pi)$$

Exercise 14C; 2b, 3b, 4b, 5bce, 8, 9, 10b, 13, 15, 16, 17, 20