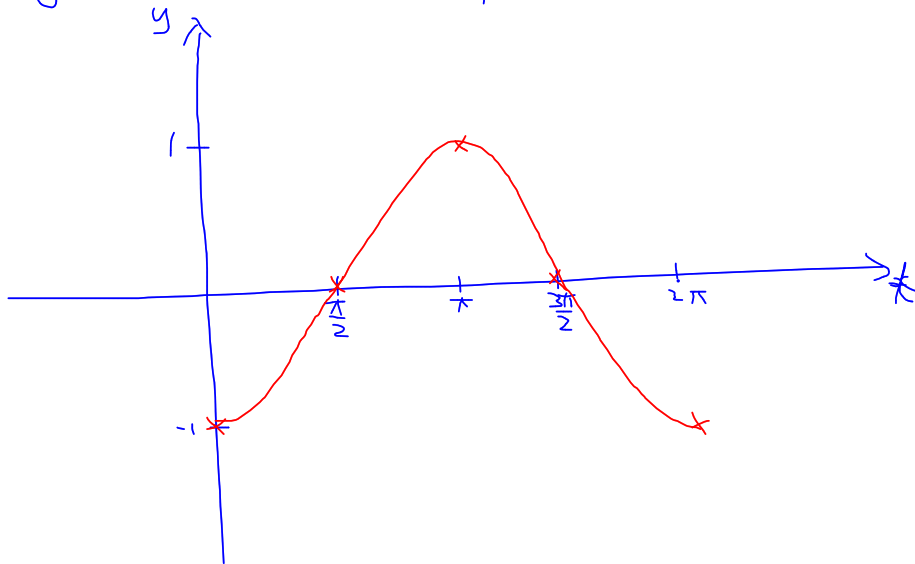


4b)

$$y = \cos(t - \pi)$$

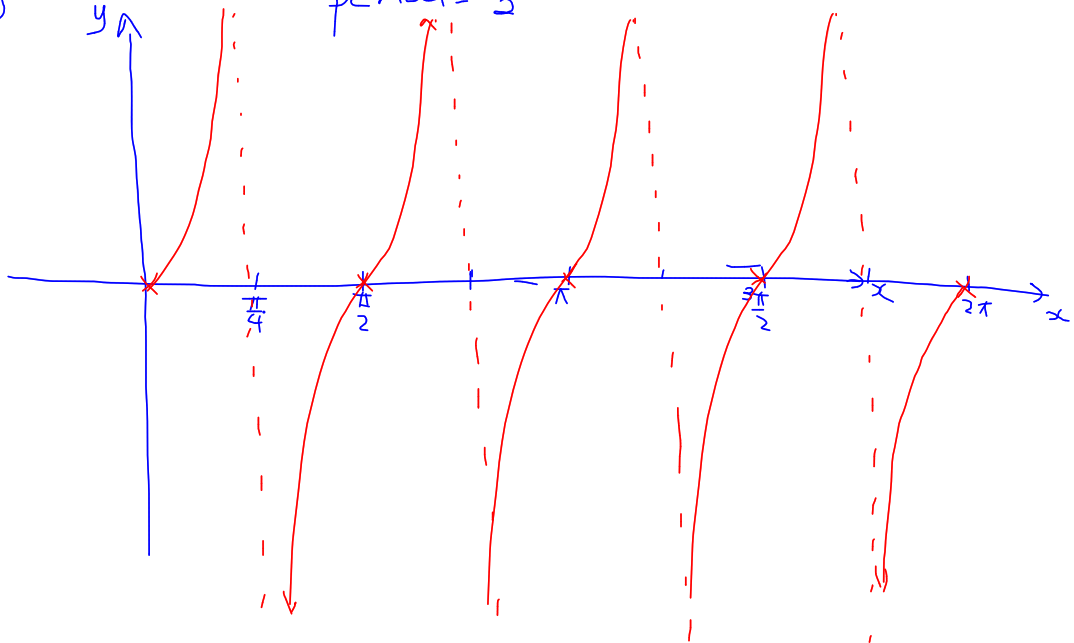
period = 2π

shift $\pi \rightarrow$

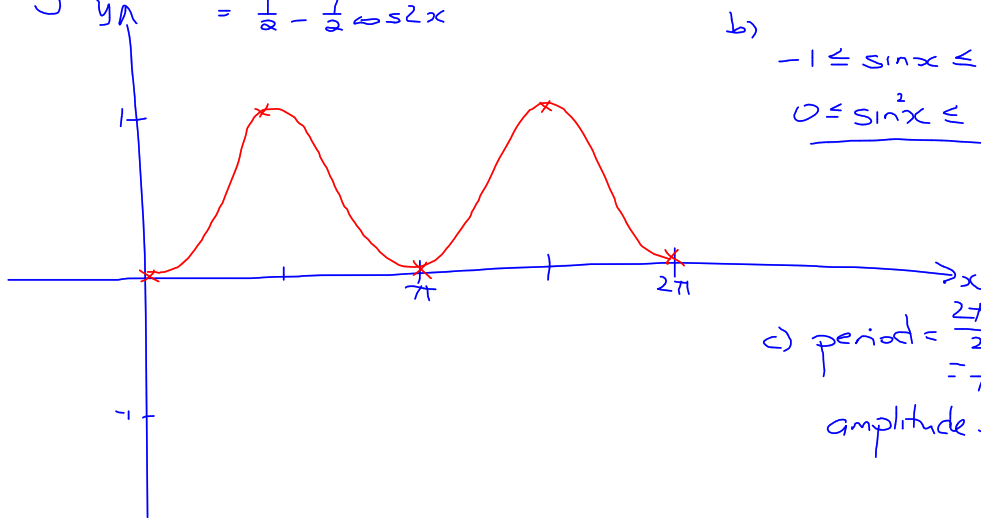


5e) $y = \tan 2x$
y ↑

period = $\frac{\pi}{2}$



$$13a) \quad y = \sin^2 x = \frac{1}{2}(1 - \cos 2x) \\ = \frac{1}{2} - \frac{1}{2} \cos 2x$$

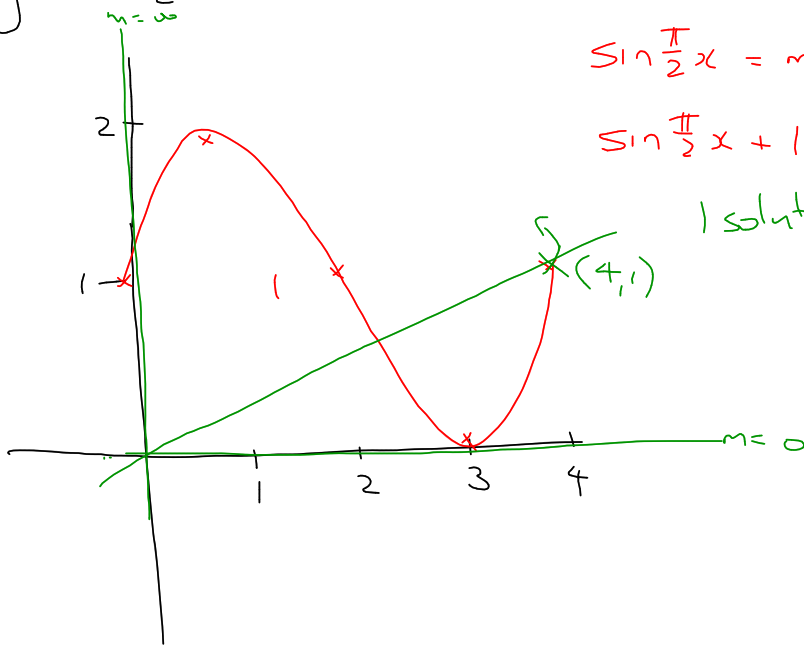


$$b) \quad -1 \leq \sin x \leq 1 \\ \underline{0 \leq \sin^2 x \leq 1}$$

$$c) \quad \text{period} = \frac{2\pi}{2} \\ = \pi \\ \text{amplitude} = \frac{1}{2}$$

15

$$y = \sin \frac{\pi}{2} x + 1$$

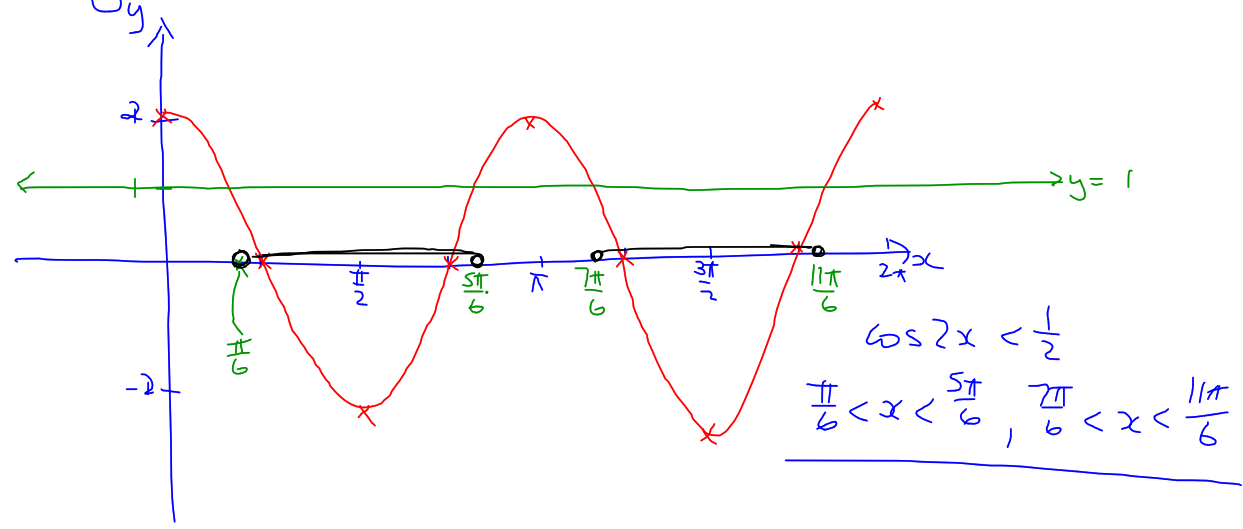


$$\sin \frac{\pi}{2} x = mx - 1$$

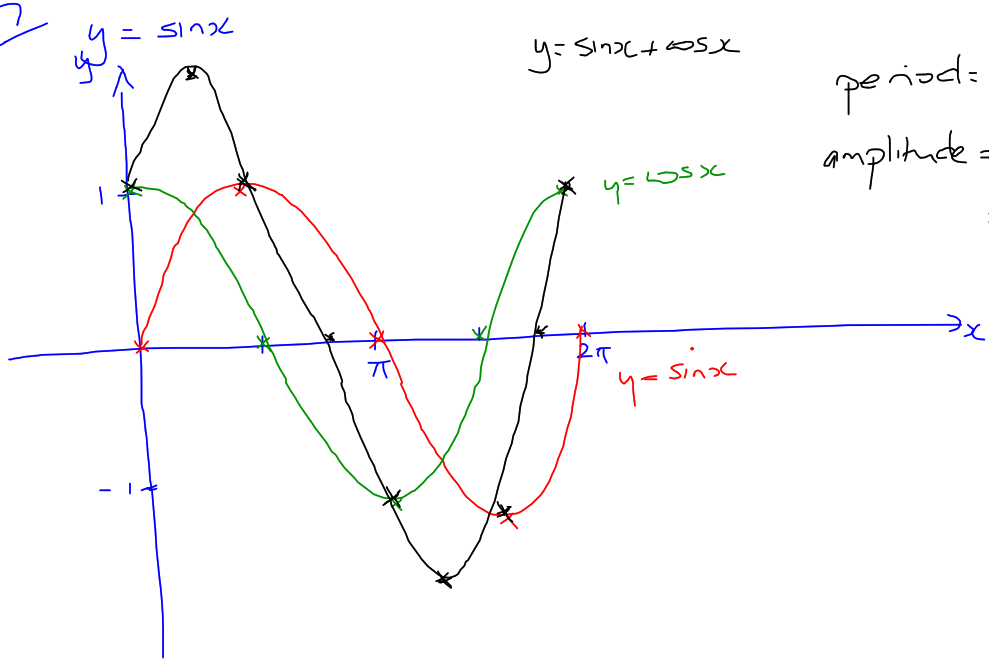
$$\sin \frac{\pi}{2} x + 1 = mx$$

1 solution if $m > \frac{1}{4}$
or
 $m = 0$

1b) $y = 2 \cos 2x$, $0 \leq x \leq 2\pi$



17



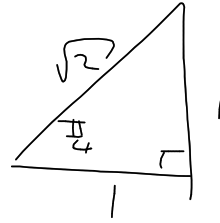
$$y = \sin x + \cos x$$

$$\text{period} = 2\pi$$
$$\text{amplitude} = \frac{2}{\sqrt{2}}$$
$$= \sqrt{2}$$

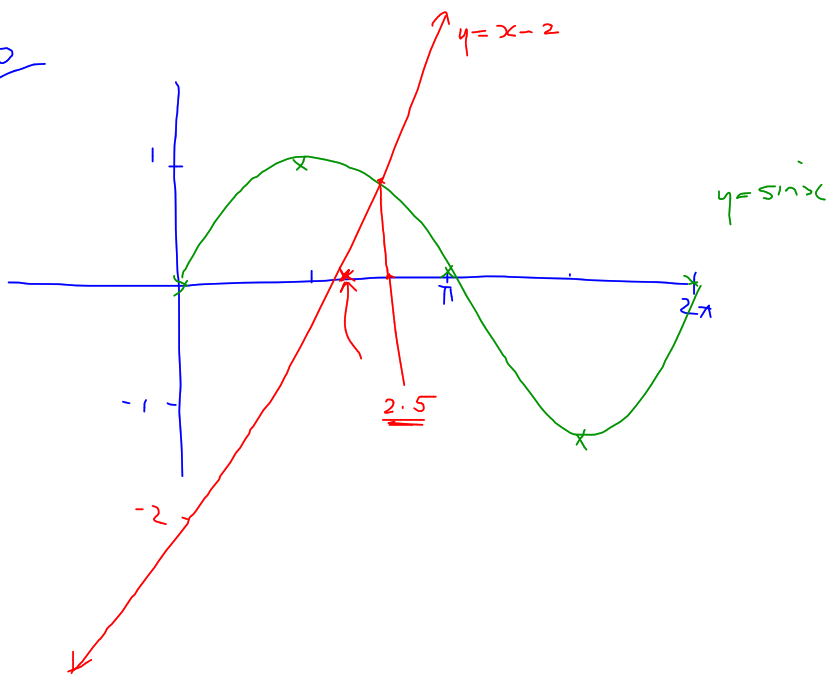
17

$$y = \sin x \cos x + \cos x \sin x$$
$$y = \sin x + \cos x$$

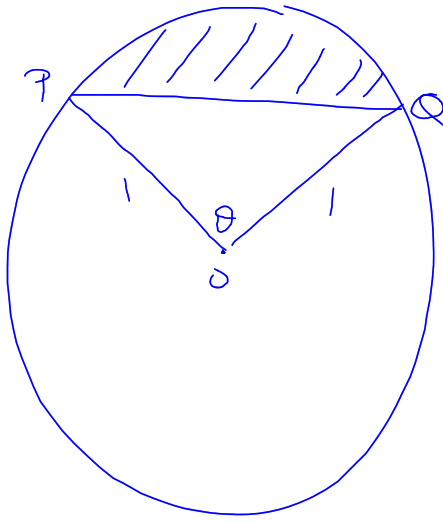
$$y = \sqrt{2} \sin\left(x + \frac{\pi}{4}\right)$$



20



b)



$$A = \frac{1}{2}(\pi)^2 \theta - \frac{1}{2}(1)^2 \sin \theta$$

$$1 = \frac{\theta}{2} - \frac{\sin \theta}{2}$$

$$2 = \theta - \sin \theta$$

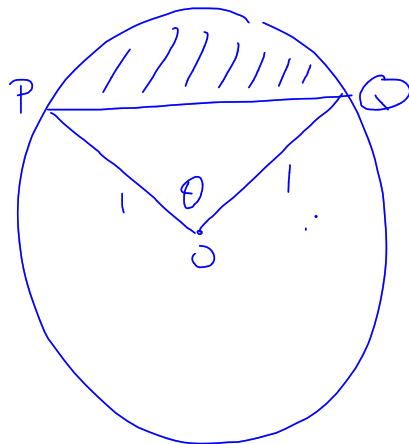
$$\sin \theta = \theta - 2$$

$$\theta = 2.5 \text{ radians}$$

$$\theta = \frac{2.5 \times 180}{\pi}$$

$$= \underline{143^\circ}$$

20 c)



$$\frac{1}{2} (1)^2 (\theta - \sin \theta) = 2$$

$$\theta - \sin \theta = 4$$

$$\sin \theta = \theta - 4$$