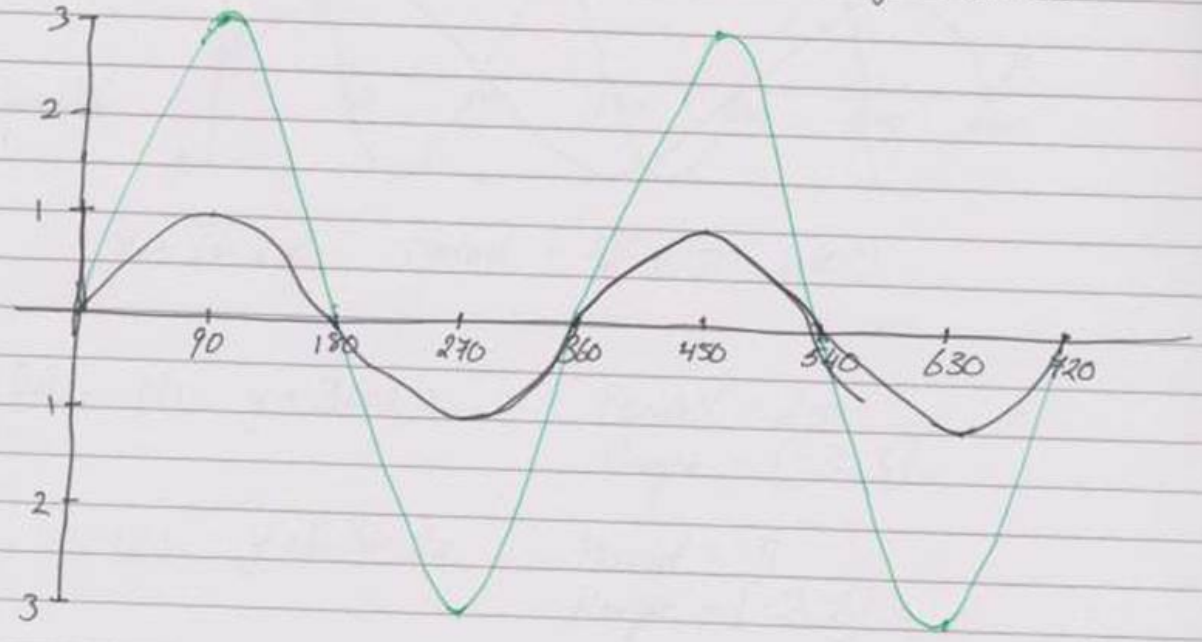
Ex 2.7

Q1 $y = \sin x \quad 0 \le x \le 720$ $\quad y = 3\sin x$



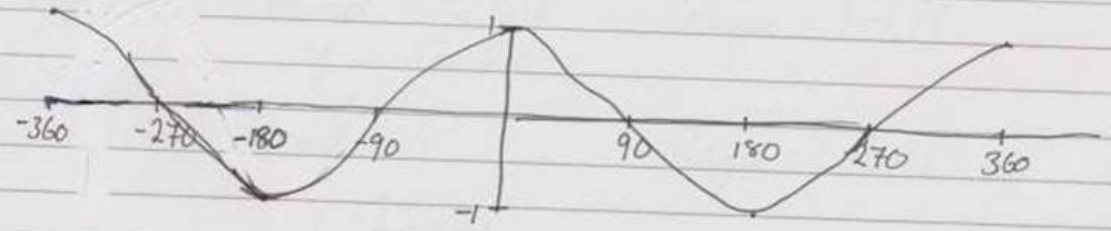
(i) Period = 360° or 2π (ii) range = $[-1, 1]$

(iii) Period = 360° or 2π (iv) range = $[-3, 3]$

(i) Period = 360° or 2π (ii) range = [-1, 1]

(iii) Period = 360° or 2π (iv) range = [-3, 3]

Q2 $y = \cos x$ $-360 \leq x \leq 360$

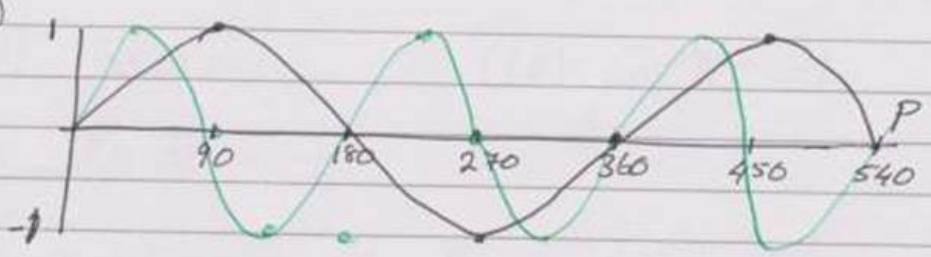


(i) Period = 360° = 2π

(ii) Range = [-1, 1]

Q3 (i) P (540, 0)

(ii)



$y = \sin 2x$ Period $= \frac{2\pi}{2} = \pi$ $(180°)$

Q4 (i) $y = 3\cos x$ Period $= 2\pi$
Range $= [-3, 3]$

(ii) $y = 2 \sin 2x$ Period $= \pi$
Range $= [-2, 2]$

(iii) $y = 4 \sin 3x$ Period $= \frac{2\pi}{3}$
Range $= [-4, 4]$

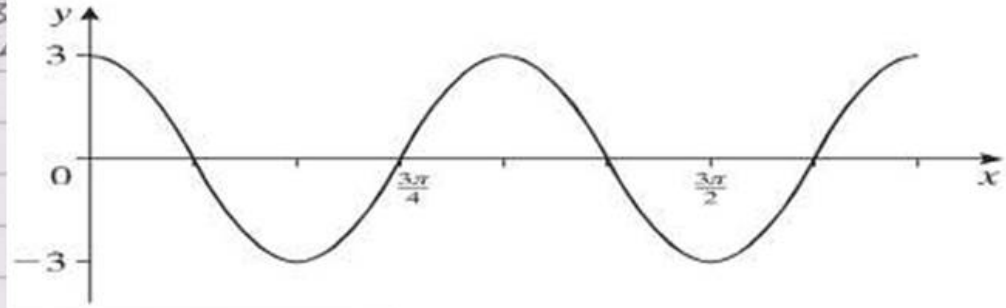
Q5 Period $= \frac{4\pi}{\pi}$ [illegible]

(iii) $y = 4\sin 3x$ Period $= \frac{2\pi}{3}$

Range $= [-4,$

Q5 Period $= \frac{4\pi}{4} = \pi$ Range $= [-3, 3]$

$y = 3\cos 2x$



Q6 (i) Period $= \frac{4\pi}{4} = \pi$. Range $= [-1, 1]$

$y = \cos 2x$

(ii) Period $= \pi$ Range $= [-2, 2]$

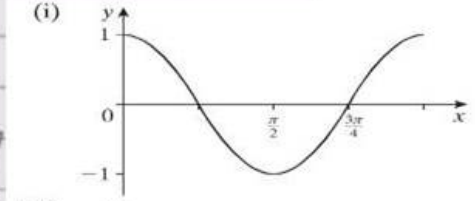
$y = 2\sin 2x$

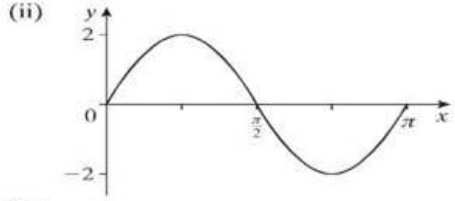
(iii) Period $= \frac{\pi}{2}$ Range $= [-\frac{1}{2}, \frac{1}{2}]$

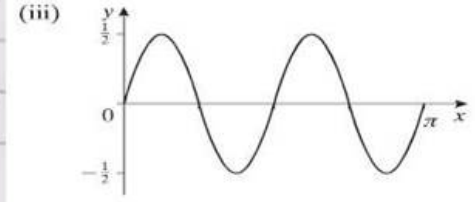
$y = \frac{1}{2}\sin 4x$

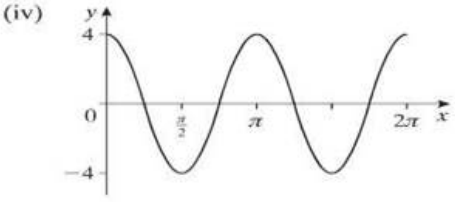
(iv) Period $= \pi$ Range $= [4, 4]$

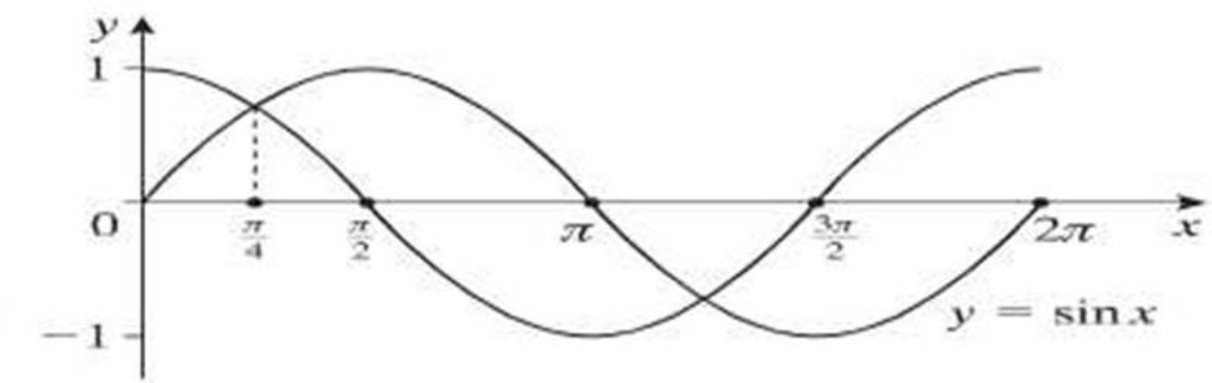
$y = 4\cos 2x$











Q7 (i) $\sin\frac{\pi}{2} = 1$ (ii) $\sin\pi = 0$

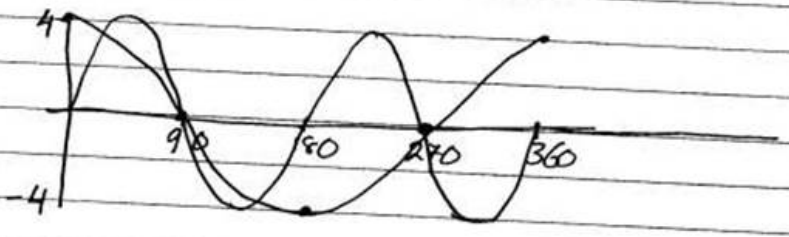
(iii) $\cos 0 = 1$ (iv) $\cos\pi = -1$

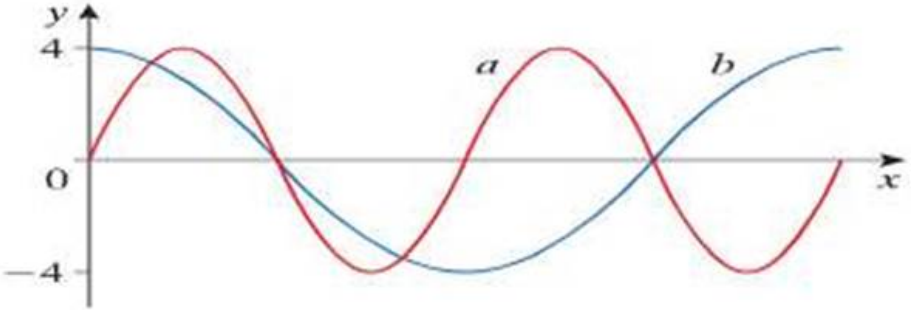
(v) $\sin\frac{3\pi}{2} = -1$

$\sin x = \cos x$ at $\frac{\pi}{4}$ and $\frac{5\pi}{4}$

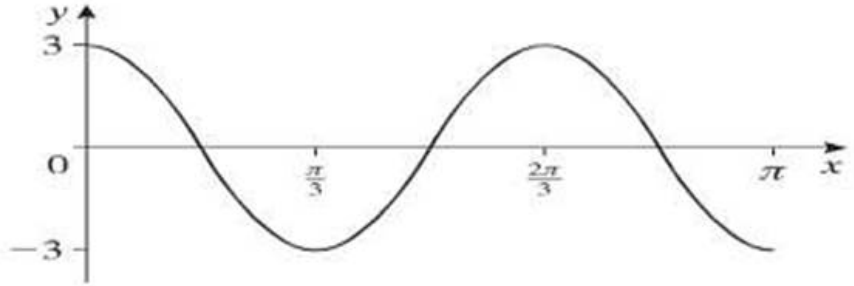
Q8 $a = 4\sin 2x$

$b = 4\cos x$





9. Write down an equation of the function shown.



Hence write down the values of x in the given domain for which

(i) $f(x) = 3$ (ii) $f(x) = 0$ (iii) $f(x) = -3$.

Q9 Period = $[-3, 3]$ Range = $\frac{2\pi}{3}$

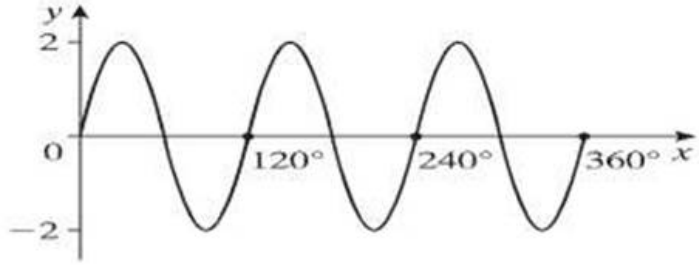
$y = 3\cos 3x$

(i) 0 and $\frac{2\pi}{3}$

(ii) $\frac{\pi}{6}$ and $\frac{3\pi}{6} - \frac{\pi}{2}$ and $\frac{5\pi}{6}$.

(iii) $\frac{\pi}{3}$ and π

10. Write down the equation of the trigonometric function shown on the right.

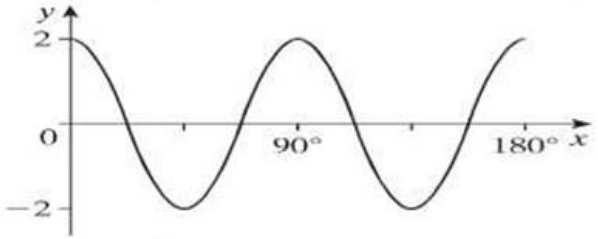


Q10 Period = $120° = \frac{2\pi}{3}$ Range = $[-2, 2]$

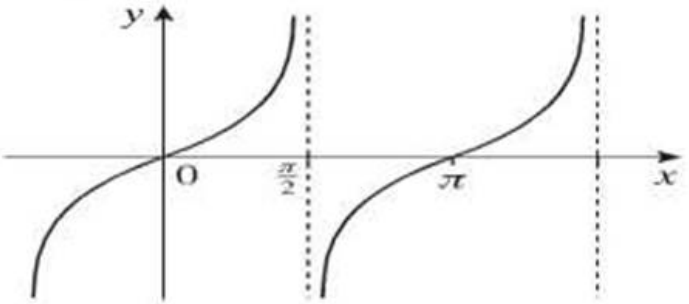
$y = 2 \sin 3x$

11. Write down a possible function for each of t

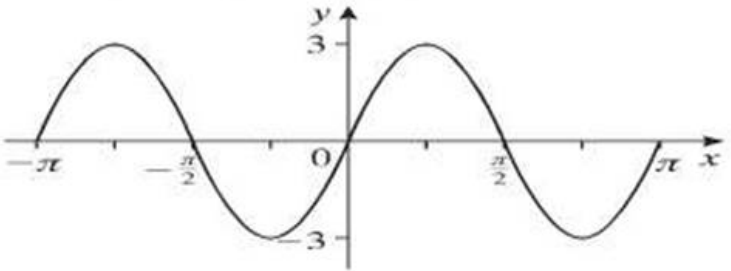
(i)



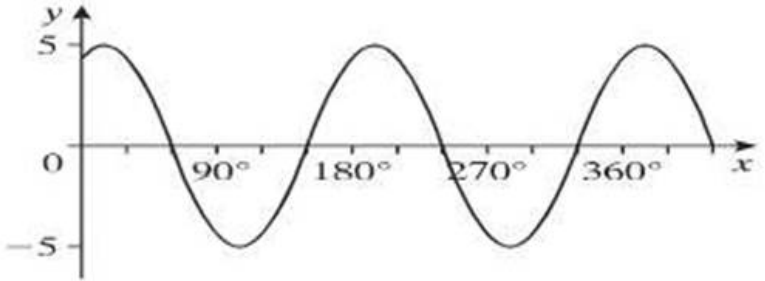
(ii)



(iii)



(iv)



Q11 (i) g Period = $90° = \frac{1}{2}\pi$ Range = $[-2, 2]$

$y = 2\cos 4x$

(ii) Period = π

$y = \tan x$

(iii) Period = π Range = $[-3, 3]$

$y = 3\sin 2x$

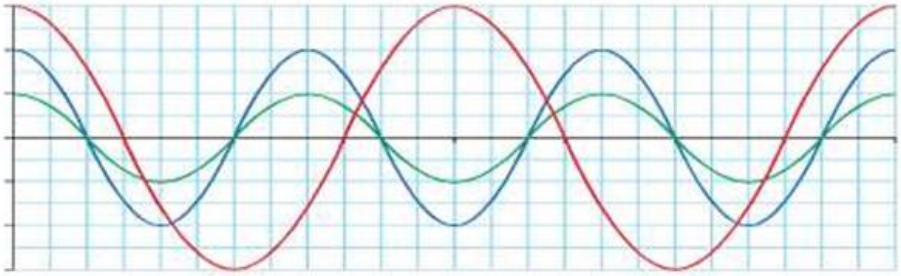
(iv) Period = $180° = \pi$ Range = $[-5, 5]$

$y = 5\cos 2x$

12. The graphs of three functions are shown on the diagram below. The scales on the axes are not labelled. The three functions are:

$x \to \cos 3x$
$x \to 2 \cos 3x$
$x \to 3 \cos 2x$

Identify which function is which, and write your answers in the spaces below the diagram.



(i) $f(x) =$; $g(x) =$; $h(x) =$

(ii) Make a rough copy of the diagram and label the scales on the x-axis and y-axis.