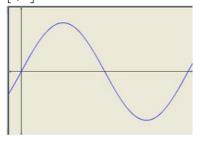


Chapter 6 Graphs of Trigonometric Functions Ex 6.1 Q1

To obtain the graph of $y = 3\sin x$ we first draw the graph of $y = \sin x$ in the interval $\lceil 0.2\pi \rceil$. The maximum and minimum values are 3 and - 3 respectively.



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

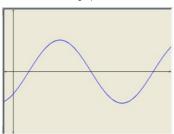
$$\Rightarrow \qquad (y-0) = 2\sin\left(x-\frac{\pi}{4}\right)$$

Shifting the origin at $\left(\frac{\pi}{4},0\right)$, we have

$$X = X + \frac{\pi}{4} \text{ and } y = Y + 0$$

Substituting these values in (i), we get $Y = 2 \sin X$

Thus we draw the graph of $Y=2\sin X$ and shift it by $\frac{\pi}{4}$ to the right to get the required graph.



We have,

$$y = 2\sin(2x - 1)$$

$$\Rightarrow \qquad \left(y-0\right)=2\sin 2\left(x-\frac{1}{2}\right)$$

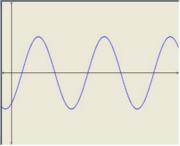
Shifting the origin at $\left(\frac{1}{2},0\right)$, we have

$$X = X + \frac{1}{2}$$
 and $y = Y + 0$

 $x=X+\frac{1}{2} \text{ and } y=Y+0$ Substituting these values in (i), we get

$$Y = 2 \sin 2X$$

Thus we draw the graph of $Y = 2 \sin 2X$ and shift it by 1/2 to the right to get the required graph.



We have,

$$y = 3 \sin \left(3x + 1\right)$$

$$\Rightarrow (y-0) = 3 \sin 3 \left(x + \frac{1}{3}\right)$$

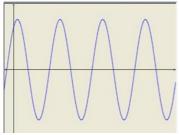
Shifting the origin at $\left(-\frac{1}{3},0\right)$, we have

$$x = X - \frac{1}{3}$$
 and $y = Y + 0$

Substituting these values in $\mbox{(i)}\,\mbox{, we get}$

 $Y = 3 \sin 3X$

Thus we draw the graph of $Y = 3 \sin 3X$ and shift it by 1/3 to the left to get the required graph.



We have,

$$y = 3\sin\left(2x - \frac{\pi}{4}\right)$$

$$\Rightarrow \qquad (y-0) = 3\sin 2\left(x-\frac{\pi}{8}\right)$$

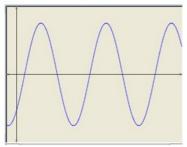
Shifting the origin at $\left(\frac{\pi}{8},0\right)$, we have

$$X = X + \frac{\pi}{8} \text{ and } y = Y + 0$$

Substituting these values in (i), we get

$$Y = 3 \sin 2X$$

Thus we draw the graph of $Y = 3\sin 2X$ and shift it by $\frac{\pi}{8}$ to the right to get the required graph.



********* END ********