■ **Solve the following.**

[1] $\sin 2x = \frac{1}{2},\ 0 \le x \le 2\pi$

[2] $\sin 4x = \frac{1}{2},\ 0 \le x \le 2\pi$

Answers

■ **Solve the following.**

[1] $\sin 2x = \frac{1}{2}$

$\Longrightarrow x = \frac{\pi}{12} + n\pi \bigvee x = \frac{5\pi}{12} + n\pi$

In[6]:=

```
Table[{n, π/12 + n π}, {n, 0, 2}]
```

Out[6]=

$$\begin{pmatrix} 0 & \frac{\pi}{12} \\ 1 & \frac{13\pi}{12} \\ 2 & \frac{25\pi}{12} \end{pmatrix}$$

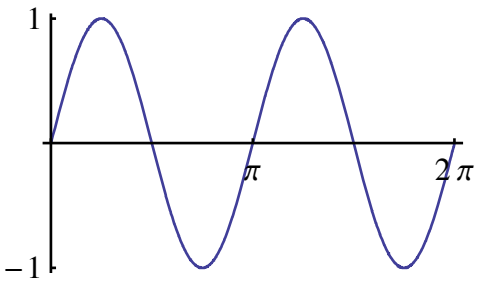
In[27]:=

```
Table[{n, 5 π/12 + n π}, {n, 0, 2}]
```

Out[27]=

$$\begin{pmatrix} 0 & \frac{5\pi}{12} \\ 1 & \frac{17\pi}{12} \\ 2 & \frac{29\pi}{12} \end{pmatrix}$$

$\therefore x = \frac{\pi}{12}, \frac{13\pi}{12}, \frac{5\pi}{12}, \frac{17\pi}{12}$



[2] $\sin 4x = \frac{1}{2}$

$\Longrightarrow x = \frac{\pi}{24} + \frac{n\pi}{2}, \vee x = \frac{5\pi}{24} + \frac{n\pi}{2}$

In[20]:=

```
Table[{n, π/24 + n π/2}, {n, 0, 4}]
```

Out[20]=

$$\begin{pmatrix} 0 & \frac{\pi}{24} \\ 1 & \frac{13\pi}{24} \\ 2 & \frac{25\pi}{24} \\ 3 & \frac{37\pi}{24} \\ 4 & \frac{49\pi}{24} \end{pmatrix}$$

In[29]:=

```
Table[{n, 5 π/24 + n π/2}, {n, 0, 4}]
```

Out[29]=

$$\begin{pmatrix} 0 & \frac{5\pi}{24} \\ 1 & \frac{17\pi}{24} \\ 2 & \frac{29\pi}{24} \\ 3 & \frac{41\pi}{24} \\ 4 & \frac{53\pi}{24} \end{pmatrix}$$

$\therefore x = \frac{\pi}{24}, \frac{13\pi}{24}, \frac{25\pi}{24}, \frac{37\pi}{24}, \frac{5\pi}{24}, \frac{17\pi}{24}, \frac{29\pi}{24}, \frac{41\pi}{24}$