

[10-01-04-T11]

■ Find all solutions by thinking as we did in class.

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

[2]  $\sin 3x = \frac{1}{2}$ .

[3]  $\sin 7x = \frac{\sqrt{3}}{2}$ .

[4]  $\cos 3x = \frac{\sqrt{2}}{2}$ .

[5]  $\cos 2x = \frac{1}{2}$ .

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

sample  
on  
BACK

$$\sin 5x = \frac{1}{2}$$

$$\sin \frac{\pi}{6} = \frac{1}{2}, \quad \frac{\pi}{6} \text{ is } \frac{1}{12} \text{ of period of } y = \sin x$$

$$\sin \frac{5\pi}{6} = \frac{1}{2}, \quad \frac{5\pi}{6} \text{ is } \frac{5}{12} \text{ of period of } y = \sin x$$

Every member of the family of

$$y = \sin k(x - c)$$

takes the value of  $\frac{1}{2}$  at  $\frac{1}{12}$  and at  $\frac{5}{12}$  of its period.

Period of  $\sin 5x$  is  $\frac{2\pi}{5}$

$$\frac{1}{12} \text{ of } \frac{2\pi}{5} = \frac{2\pi}{60} = \frac{\pi}{30}$$

$$\frac{5}{12} \text{ of } \frac{2\pi}{5} = \frac{10\pi}{60} = \frac{\pi}{6}$$

period of  $\sin 5x$  is  $\frac{2\pi}{5}$

$$\therefore x = \frac{\pi}{30} + \frac{2n\pi}{5}, \quad x = \frac{\pi}{6} + \frac{2n\pi}{5}$$