47. $\tan 3 x+1=\sec 3 x$
(1)

$$
\begin{aligned}
& \frac{\sin 3 x}{\cos 3 x}+1=\frac{1}{\cos 3 x} \\
& \sin 3 x+\cos 3 x=1 \\
& \sin ^{2} / 3 x+2 \sin 3 x \cos 3 x+\cos ^{2} 3 x=1 \\
& \sin 6 x=0 \\
& 6 x=\left[\begin{array}{c}
0+360^{\circ} k \\
180^{\circ}+360^{\circ} k
\end{array}\right] 0+180^{\circ} k \\
& x=30^{\circ} k \\
& 0,30^{\circ}, \cdots \\
& 0, \frac{\pi x}{6}, \frac{2 \pi}{6}, \cdots \frac{11 \pi}{6}
\end{aligned}
$$

$$
\begin{aligned}
& \text { 47. } \begin{aligned}
& \tan 3 x+1=\sec 3 x \\
& \tan ^{2} 3 x+2 \tan 3 x+1 /=\sec ^{2} 3 x \\
& \tan 3 x=0 \\
& 3 x=0+180^{\circ} k \\
& x=60^{\circ} k
\end{aligned} \\
& \therefore 60 \quad 120 \quad 186 \quad 240
\end{aligned}
$$

$360 \tan 3 x+1=\sec 3 x$

$$
\begin{aligned}
& \text { 45. } \begin{array}{l}
\tan x-3 \cot x=0 \\
\tan ^{2} x=3 \\
\tan x= \pm \sqrt{3} \\
\tan x=\sqrt{3}, \\
x=60^{\circ}, 240^{\circ}, \quad \tan x=-\sqrt{3} \\
120,300^{\circ}
\end{array}
\end{aligned}
$$

69. $\sin x+\sin 3 x=0$
$\sin A+\sin B=\{/ \sin A+B$.
