

$$\operatorname{ctg} 3x = -1$$

$$3x = \operatorname{arcctg}(-1) + \pi n, n \in Z$$

$$3x = -\operatorname{arcctg} 1 + \pi n, n \in Z$$

$$3x = -\frac{\pi}{4} + \pi n, n \in Z$$

$$x = -\frac{\pi}{4 \cdot 3} + \frac{\pi}{3} n, n \in Z$$

$$x = -\frac{\pi}{12} + \frac{\pi}{3} n, n \in Z$$

$$\sin^2 2x = 1$$

$$\sin 2x = 1$$

$$2x = \frac{\pi}{2} + 2\pi n, n \in Z$$

$$x = \frac{\pi}{4} + \pi n, n \in Z$$

$$\sin 2x = -1$$

$$2x = -\frac{\pi}{2} + 2\pi k, k \in Z$$

$$x = -\frac{\pi}{4} + \pi k, k \in Z$$