Find all solutions to the equation $7\sin^2 x$ - 14 sin x + 2 = -5 .

Solution.

$$7\sin^2 x - 14\sin x + 2 = -5 \implies 7\sin^2 x - 14\sin x + 7 = 0 \implies$$

$$\implies \sin^2 x - 2\sin x + 1 = 0 \implies (\sin x - 1)^2 = 0 \implies$$

$$\implies \sin x - 1 = 0 \implies \sin x = 1 \implies x = \frac{\pi}{2} + 2\pi k, k \in \mathbb{Z}.$$

Answer.

$$x \in \left\{\frac{\pi}{2} + 2\pi k \colon k \in \mathbb{Z}\right\}.$$