$$4\sin(7x)\cos(2x) = 2\sin(9x) - 1$$

$$2\sin(9x) + 2\sin(5x) = 2\sin(9x) - 1$$
$$2\sin(5x) = -1$$
$$5x = -\frac{\pi}{6} + 2k\pi \quad \vee \quad 5x = -\frac{5\pi}{6} + 2k\pi$$
$$x = -\frac{\pi}{30} + \frac{2k\pi}{5} \quad \vee \quad x = -\frac{\pi}{6} + \frac{2k\pi}{5}$$