Common Trigonometry Mistakes

Example: Solving an Equation

The Goal

Solve the following equation for $0 \le x \le 2\pi$:

$$2\cos(x) + 2\sin(x) = 0$$

The Mistake

Find the mistake:

$$2\cos(x) + 2\sin(x) = 0 \implies \cos(x) = \sin(x) \implies x = \frac{\pi}{4} \text{ or } \frac{5\pi}{4}$$

Need a hint? Look carefully at the red part:

$$2\cos(x) + 2\sin(x) = 0 \implies \cos(x) = \sin(x) \implies x = \frac{\pi}{4} \text{ or } \frac{5\pi}{4}$$

The Correction

$$2\cos(x) + 2\sin(x) = 0 \implies \cos(x) = -\sin(x) \implies \tan(x) = -1 \implies x = \frac{3\pi}{4} \text{ or } \frac{7\pi}{4}$$

An Explanation

After cancelling the 2 (a common factor) from the equation, sin(x) should have been *subtracted* from both sides. Take care with steps like this!

<-- Back