Answer on Question#54666 – Math – Linear Algebra

Question. Which of the following statements are true and which are false? Justify your answer with a short proof or a counterexample.

1) The function $f: \mathbb{R} \to \mathbb{R}$ defined by $f(x) = \cos x$ is 1-1.

Solution. Let $x = 0, y = 2\pi; x, y \in D(f)$. Then $\cos x = \cos 0 = 1$; $\cos y = \cos 2\pi = 1$ but $x \neq y$. So we have that $\cos x = \cos y$ does not entail $x = y$. $f(x) = \cos x$ is not 1-1.

Answer. False.