Name_____Banner_____

Fall 2007 Quiz #8 Solutions Precalculus

#1) True or False

A) If the graph of a function passes the horizontal line test then that function has an inverse. True

B) If you flip the graph of a function over the x axis you get the graph of that function's inverse. False, flip f(x) over the line y = x to find the graph of the inverse.

C) The function $f(x) = x^2$ has an inverse function. False.

D) The function $g(x) = x^3$ has an inverse function. True.

E) $\sqrt{x^2} = x$ False.

F) $\sqrt{x^2} = \pm x$ False. $\sqrt{x^2} = |x|$

G) If f(x) has an inverse $f^{-1}(x)$ then $f^{-1}(f(x)) = f(f^{-1}(x)) = x$ True

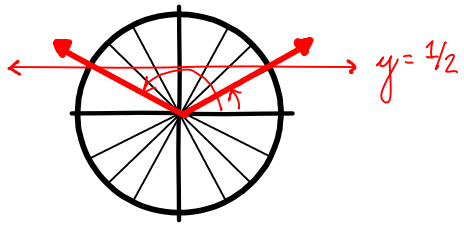
H) If f(x) has an inverse $f^{-1}(x)$ then $(f^{-1})^{-1} = f$ True

I) If f(x) has an inverse $f^{-1}(x)$ then $f^{-1}(x) = 1/x \neq 1/f(x)$ False

J) Cosine is the inverse of sine False

#2) Solve for t. Write your answers using proper notation.

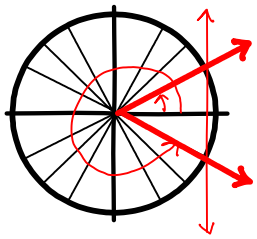
A) $\sin(t) = 1/2 \iff t \in \{\pi/6 + 2n\pi,\ 5\pi/6 + 2n\pi;\ n \in \mathbb{Z}\}$



B) $2\cos(t) = \sqrt{3} \iff \cos(t) = \sqrt{3}/2$

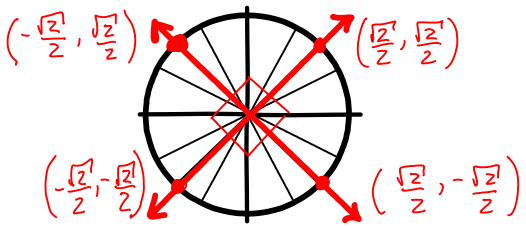
$x = \sqrt{3}/2 \iff t \in \{\pi/6 + 2K\pi,\ 11\pi/6 + 2K\pi;\ K \in \mathbb{Z}\}$

$= \{\pm\pi/6 + 2\pi K;\ K \in \mathbb{Z}\}$



C) $\tan(t) = \pm 1 \iff \begin{cases} \tan(t) = 1 \iff t \in \{\pi/4 + n\pi;\ n \in \mathbb{Z}\} \\ \tan(t) = -1 \iff t \in \{3\pi/4 + n\pi;\ n \in \mathbb{Z}\} \end{cases}$

$\iff t \in \{\pi/4 + n\pi/2\}$



Extra Credit: Why is the number zero placed after 9 on your keyboard and cell phone even though zero comes before 1 on the number line? Here, zero is being treated as a placeholder instead of an actual value.