Quiz 5a **Calculus 2** **4/2/04**

Each problem is worth 5 points. For full credit provide proper justification for your answer.

1. Determine whether $y = 2\cos 4x$ is a solution to the differential equation $\frac{d^2y}{dx^2} = -4y$.

$y = 2\cos 4x$

$y' = -8\sin 4x$

$y'' = -32\cos 4x$

$-4(2\cos 4x) \stackrel{?}{=} -32\cos 4x$

$-8\cos 4x \neq -32\cos 4x$

Good

NO

2. Determine whether the function $y = xe^{-3x}$ is a solution to the differential equation $3y + y' = y/x$.

$3y + y' = \frac{y}{x}$

$3(xe^{-3x}) + (xe^{-3x})' = \frac{xe^{-3x}}{x}$

$3xe^{-3x} + e^{-3x} + x(-3)e^{-3x} = e^{-3x}$

$e^{-3x} = e^{-3x}$

Yes, function is a solution.

Nice Job