Quiz 1 Calculus 2 8/31/2007

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Find the most general antiderivative of $f(x) = \dfrac{x^3 + x^2}{\sqrt{x}}$.

$f(x) = \dfrac{x^3}{x^{1/2}} + \dfrac{x^2}{x^{1/2}}$

$f(x) = x^{5/2} + x^{3/2}$

Excellent

$F(x) = \dfrac{x^{7/2}}{7/2} + \dfrac{x^{5/2}}{5/2}$

$F(x) = \dfrac{2}{7}x^{7/2} + \dfrac{2}{5}x^{5/2} + C$

2. Find the most general antiderivative of $g(x) = 2x + 5\left(1 - x^2\right)^{-1/2}$.

$\int g(x)\,dx = \int \left(2x + 5(1-x^2)^{-1/2}\right) dx$

$= \int 2x\,dx + \int \dfrac{5}{\sqrt{1-x^2}}$

$= x^2 + 5\sin^{-1}(x) + C$

Great.