Mathematics 122

Quiz #34 Name: Key

You must show your work to get full credit.

1 pt (1) Find an antiderivative of $f(t) = 6\sqrt{t} + \dfrac{12}{t^3}$.

$f(t) = 6t^{\frac{1}{2}} + 12t^{-3}$

$F(t) = \dfrac{6\left(\frac{2}{3}\right)t^{3/2} + \frac{12}{-3}t^{-2}}{= 4t^{3/2} - 4t^{-2}}$

1 pt (2) Find an antiderivative of $h(s) = 4e^{.25s}$.

$H(s) = \dfrac{\frac{4}{.25}e^{.25s}}{= 16e^{.25s}}$

1 pt (3) Compute $\displaystyle\int \left(\frac{2}{x^2} - 5e^{3x}\right) dx$.

$= \int (2x^{-2} - 5e^{3x})\,dx$

$\dfrac{\frac{2}{-1}x^{-1} - \frac{5}{3}e^{3x} + C}{= -2x^{-1} - \frac{5}{3}e^{3x} + C}$

2 pt (4) If a is a constant compute $\displaystyle\int_0^a (ax^2 - x^3)\,dq$. $\dfrac{a^4}{12}$

$= \left(\frac{ax^3}{3} - \frac{x^4}{4}\right)\Big|_0^a$ ← 1 pt for setting here

$= \frac{aa^3}{3} - \frac{a^4}{4} - (0-0)$ ← ok here

$= \frac{a^4}{3} - \frac{a^4}{4} = \frac{a^4}{12}$