

## Quiz 10

Name:

Section:

Please box or circle your final answers.

1. Approximate  $\int_0^8 (x^2 + 4x + 2) dx$  use a right Riemann sum with 100 rectangles.

$$\text{Using Riemann approx} = 318.5152$$

2. A farmer uses the demand equation  $p = 10 - .02x + \frac{1}{x}$  to determine how much he should charge when he sells bushels of beans, where  $x$  is the number of bushels and  $p$  is price. He estimates this year's crop to be between 200 and 500 bushels. Find the average price he should charge.

$$\frac{1}{500-200} \int_{200}^{500} 10 - .02x + \frac{1}{x} dx = \frac{1}{300} \cdot 900.9162907 = \underline{\underline{3.00365}}$$

using fn Int

3.  $\int (x^2 e^{3x^3+10}) dx$      $u = 3x^3 + 10$ ,  $du = 9x^2 dx \Rightarrow \frac{1}{9} du = x^2 dx$

$$\int \frac{e^u}{9} du = \frac{1}{9} \int e^u du = \frac{1}{9} e^u + C = \underline{\underline{\frac{1}{9} e^{3x^3+10} + C}}$$

4.  $\int \frac{12x}{(3-4x^2)^9} dx$      $u = 3 - 4x^2$ ,  $du = -8x dx \Rightarrow -\frac{du}{8} = x dx$

$$\begin{aligned} \int \frac{x}{(3-4x^2)^9} dx &= 12 \int \frac{x dx}{u^9} = 12 \int -\frac{1}{8} \frac{1}{u^9} du = 12 \int -\frac{1}{8} u^{-9} du \\ &= -\frac{12}{8} \frac{u^{-8}}{-8} + C = \frac{12}{64} u^{-8} + C = \underline{\underline{\frac{12}{64} (3-4x^2)^{-8} + C}} \end{aligned}$$