

Quiz 3

Name Key  
 Recitation (Circle) 1:30P 2:30P  
 3:30P 4:30P

Use the techniques learned in class to do the following problems and show your work!!!

Problem 1: (6 points) Integrate!

$$\int \frac{x+3}{2x^2+12x} dx + \int (1-x)^{\frac{1}{7}} dx$$

$$u = (2x^2 + 12x)$$

$$du = 4x + 12 dx$$

$$dx = \frac{du}{4(x+3)}$$

$$\int \frac{x+3}{u} \frac{du}{4(x+3)} = \frac{1}{4} \int \frac{1}{u} du$$

$$= \frac{1}{4} \ln|u| = \frac{1}{4} \ln|2x^2 + 12x|$$

$$u = 1-x$$

$$du = -dx$$

$$dx = -du$$

$$\int u^{\frac{1}{7}} (-) du = -\int u^{\frac{1}{7}} du = -\frac{u^{\frac{8}{7}}}{\frac{8}{7}}$$

$$= -\frac{7}{8} (1-x)^{\frac{8}{7}}$$

$$\ln|2x^2 + 12x| + \frac{-7}{8} (1-x)^{\frac{8}{7}} + C$$

Problem 2: (4 points) Find the sum.

$$\sum_{i=1}^{100} (3i+2)^2$$

$$= \sum_{i=1}^{100} (9i^2 + 12i + 4)$$

$$= 9 \sum_{i=1}^{100} i^2 + 12 \sum_{i=1}^{100} i + 4 \sum_{i=1}^{100} 1$$

$$= 9 \frac{100(101)(201)}{6} + \frac{12(100)(101)}{2} + 4(100)$$

$$=$$