Math 131 Quiz #4 **Name:** Answer Key

1.) Find $\int \frac{x+x^2}{2}dx$

$$\int \frac{x}{2}dx = \frac{x^2}{4} + C$$

$$\int \frac{x^2}{2}dx = \frac{x^3}{6} + C$$

$$\boxed{\int \frac{x+x^2}{2}dx = \frac{x^2}{4} + \frac{x^3}{6} + C}$$

2.) Find $\int_1^2 \frac{x+x^2}{2}dx$

$$\int_1^2 \frac{x+x^2}{2}dx = \frac{x^2}{4} + \frac{x^3}{6}\Big|_1^2 = \frac{2^2}{4} + \frac{2^3}{6} - \left(\frac{1^2}{4} + \frac{1^3}{6}\right)$$

$$= \frac{4}{4} + \frac{8}{6} - \frac{1}{4} - \frac{1}{6} = \frac{12+16-3-2}{12}$$

$$= \boxed{23/12}$$

3.) Find $\int_1^9 \frac{1}{2\sqrt{x}}dx$

$$\int \frac{1}{2\sqrt{x}}dx = \frac{1}{2}\int x^{-1/2}dx = \frac{1}{2}\,\frac{x^{1/2}}{1/2} + C = \sqrt{x} + C$$

$$\int_1^9 \frac{1}{2\sqrt{x}}dx = \sqrt{9} - \sqrt{1} = 3 - 1 = \boxed{2}$$

#1 Worth 30

#2 Worth 30

#3 Worth 40