

Homework #2 Final Answers

Section 6.2

$$83. \int_0^1 x e^x + e^x dx = \dots = \frac{1}{e+1} + e - 1$$

$$85. \int_0^2 \frac{1}{e^{\pi x}} dx = \dots = \frac{-1}{\pi} e^{-2\pi} + \frac{1}{\pi} \stackrel{\text{OR}}{=} \frac{1}{\pi} [1 - e^{-2\pi}]$$

$$88. \int \frac{(1+e^x)^2}{e^x} dx = \dots = -e^{-x} + 2x + e^x + C$$

$$89. \int (e^x + e^{-x})^2 dx = \dots = \frac{e^{2x}}{2} + 2x - \frac{e^{-2x}}{2} + C$$

$$94. \int_0^1 \frac{\sqrt{1+e^{-x}}}{e^x} dx = \dots = \frac{4\sqrt{2}}{3} - \frac{2}{3} (1 + \frac{1}{e})^{3/2}$$

$$96. \dots f(x) = 3e^x - 5\sin x + 4x - 2$$

Section 6.3

$$17. \dots = \ln \left[\frac{\sqrt{x}}{x+1} \right]$$

$$27. a. x = \frac{7 - \ln 6}{4}$$

$$b. x = \frac{e^2 + 10}{3}$$

$$47. \dots = -\infty$$

Justify

Section 6.4

$$5. f'(x) = \frac{-1}{x}$$

$$6. y' = \frac{-1}{x(\ln x)^2}$$

$$21. y' = \frac{-x}{x+1}$$

$$73. \int_1^2 \frac{1}{8-3t} dt = \dots = \frac{1}{3} \ln\left(\frac{5}{2}\right) \quad \text{or} \quad = -\frac{1}{3} \ln\left(\frac{2}{5}\right)$$

$$74. \int_4^9 \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2 dx = \dots = \frac{85}{2} + \ln\left(\frac{9}{4}\right)$$

$$75. \int_1^e \frac{x^2+x+1}{x} dx = \frac{e^2}{2} + e - \frac{1}{2}$$

$$80. \int \frac{e^x}{e^x+1} dx = \ln|e^x+1| + C$$