

Math 1121

Homework #26

#51, #66

#51

$$C'(x) = 5x - \frac{1}{x},$$

$$C(10) = 94.2$$

$$C(x) = \int 5x - \frac{1}{x} dx$$

$$C(x) = \frac{5}{2}x^2 - \ln|x| + C \quad \text{plug } x=10, \text{ set } = 94.2:$$

$$94.2 = \frac{5}{2} \cdot 10^2 - \ln 10 + C$$

$$94.2 = 250 - 2.302 + C$$

$$C = -153.49$$

$$\therefore C(x) = \frac{5}{2}x^2 - \ln|x| - 153.49$$

#66

$$D'(t) = 35.352 e^{0.0176t}$$

$$D(t) = \int 35.352 e^{.0176t} dt$$

$$= 35.352 \frac{1}{.0176} e^{.0176t} + C$$

$$D(t) = 2000 e^{.0176t} + C$$

$$1695 = 2000 e^{.0176 \cdot 21} + C$$

$$C = -1204$$

$$a) D(t) = 2000 e^{.0176t} - 1204$$

$$b) D(40) = 2000 e^{.0176 \cdot 40} - 1204$$

$$= 2852$$