# Math 122 HW #2

7.1 10, 26, 33, 48, 60

#10 $\int 5x^2 - 6x + 3\,dx = \frac{5}{3}x^3 - 3x^2 + 3x + C$

#26 $\int 10x^{-3.5} + 4x^{-1}\,dx = \frac{10}{-2.5}x^{-2.5} + 4\ln x + C$

$= -4x^{-2.5} + 4\ln x + C$

#33 $\int \frac{1+2t^3}{4t}\,dt = \int \frac{1}{4t} + \frac{2t^3}{4t}\,dt$

$= \int \frac{1}{4}t^{-1} + \frac{1}{2}t^2\,dt$

$= \frac{1}{4}\ln t + \frac{1}{2}\cdot\frac{1}{3}t^3 + C$

$= \frac{1}{4}\ln t + \frac{1}{6}t^3 + C$

#48 $C'(x) = x^{1/2}$ $\quad C(16) = 45$

$C(x) = \int x^{1/2}\,dx = \frac{2}{3}x^{3/2} + C$

$45 = \frac{2}{3}(16)^{3/2} + C$

$45 = \frac{2}{3}\cdot 64 + C \qquad C = 7/3$

$C(x) = \frac{2}{3}x^{3/2} + \frac{7}{3}$

# 60

$f'(t) = .01\, e^{-.01t}$

a) $f(t) = \int .01 e^{-.01t}\, dt = \frac{.01}{-.01} e^{-.01t} + C$

$$f(t) = -e^{-.01t} + C$$

b) $f(0) = 0$, so $0 = -e^{-.01 \cdot 0} + C$

$0 = -1 + C \qquad C = 1$

So $f(t) = -e^{-.01t} + 1$

So $f(10) = -e^{-.01 \cdot 10} + 1 = .095$