Math 1172

Homework #1

Chapter 2 review # 17

Section 4.3 # 39

4.4 # 13

4.5 # 38

Ch. 2 review #17

$$\frac{d}{dx} x^2 \sin(\pi x) = x^2 \cdot \cos \pi x \cdot \pi + \sin \pi x \cdot 2x$$

(product & chain rules)

4.3 #39

$$\int_1^2 \frac{s^4+1}{s^2}\, ds = \int_1^2 s^{-2}(s^4+1)\, ds = \int_1^2 s^2 + s^{-2}\, ds$$

$$= \frac{1}{3}s^3 + \frac{1}{-1}s^{-1}\Big|_1^2 = \frac{1}{3}2^3 - 2^{-1} - \left(\frac{1}{3}\cdot 1^3 - 1^{-1}\right)$$

4.4 #13

$$\int (u+4)(2u+1)\, du \qquad \text{FOIL}$$

$$= \int 2u^2 + 9u + 4\, du = \frac{2}{3}u^3 + \frac{9}{2}u^2 + 4u + C$$

4.5 #38

$$\int_0^1 (3t-1)^{50}\, dt$$

$u = 3t-1$

$du = 3dt$

$\frac{1}{3}du = dt$

$$= \int u^{50} \cdot \frac{1}{3}\, du = \frac{1}{3}\int u^{50}\, du = \frac{1}{3}\cdot\frac{1}{51}u^{51}$$

$$= \frac{1}{153}(3t-1)^{51}\Big|_0^1 = \frac{1}{153}(3\cdot 1 - 1)^{51} - \frac{1}{153}(3\cdot 0 - 1)^{51}$$