I. Find the indicated integral. Neatly show all of your work, clearly indicate your answers. (3 points each - 12 total)

(a) 
$$\int_{6}^{7} \frac{dx}{(x-5)^3}$$

(b) 
$$\int 4\sin(2\theta) d\theta$$

(c) 
$$\int \frac{4}{1-3x} dx$$

(d) 
$$\int_{0}^{\sqrt{7}} x \sqrt[3]{x^2 + 1} dx$$

II. Find the indicated integral. Neatly show all of your work, clearly indicate your answers. (4 points each - 8 total)

(a) 
$$\int x^5 \sqrt{x^3 + 1} \, dx$$

(b) 
$$\int_{0}^{1} \frac{t^2}{e^{t^3}} dt$$