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COLLEGE: MEDICAL AND HEALTH SCIENCES

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### Assignment

1.  $\int \frac{2x}{\sqrt{4x^2-1}} dx$

$$u = \sqrt{4x^2-1} = (4x^2-1)^{1/2}$$

$$\frac{du}{dx} = \frac{1}{2} (4x^2-1)^{-1/2} \cdot 8x$$

$$\frac{du}{dx} = 4x (4x^2-1)^{-1/2}$$

$$dx = \frac{du}{4x (4x^2-1)^{-1/2}} = \frac{(4x^2-1)^{1/2} du}{4x}$$

$$2 \int \frac{x}{(4x^2-1)^{1/2}} \cdot \frac{(4x^2-1)^{1/2} du}{4x}$$

$$= \frac{1}{2} \int du$$

$$= \frac{1}{2} u + C = \frac{1}{2} \sqrt{4x^2-1} + C //$$

2.  $\int \frac{\sin^{-1} x}{\sqrt{1-x^2}} dx$

$$u = \sin^{-1} x$$

$$\frac{du}{dx} = \frac{1}{\sqrt{1-x^2}}$$

$$dx = \frac{du}{\sqrt{1-x^2}} = (\sqrt{1-x^2})^{-1} du$$

$$\int u du$$

$$= \frac{u^2}{2} + C$$

$$= \frac{(\sin^{-1} x)^2}{2} + C$$

3.  $\int (\tan x)^6 \sec^2 x dx$

$$u = \tan x$$

$$du = \sec^2 x dx$$

$$\int u^6 du = \frac{u^7}{7} + C$$

$$= \frac{(\tan x)^7}{7} + C$$