

Math 165, Spring 2010, Lowman
Special Assign. 4, Solutions Part I
Power Rules:

$$\frac{d}{dx} u(x)^n = n \cdot u(x)^{n-1} \cdot u'(x)$$

$$\int u(x) u(x)^n dx = \frac{u(x)^{n+1}}{n+1} + C$$

Log Rules:

$$\frac{d}{dx} \ln u(x) = \frac{u'(x)}{u(x)}$$

$$\int \frac{u'(x)}{u(x)} dx = \ln |u(x)| + C$$

Exponential Rules:

$$\frac{d}{dx} e^{u(x)} = e^{u(x)} \cdot u'(x)$$

$$\int u'(x) \cdot e^{u(x)} dx = e^{u(x)} + C$$

Multiply by One Trick:

$$\int f(x) dx = \frac{1}{K} \int K \cdot f(x) dx, \quad K = \text{Constant.}$$