

A few review items for Exam 2.

In the formulas below you should assume $u = u(x)$ is a function of x .

$$F(x) \quad F'(x)$$

$$c \quad 0$$

$$u^n \quad nu^{n-1} \frac{du}{dx}$$

$$\sin(u) \quad \cos(u) \frac{du}{dx}$$

$$\cos(u) \quad -\sin(u) \frac{du}{dx}$$

$$\tan(u) \quad \sec^2(u) \frac{du}{dx}$$

$$\sec(u) \quad \sec(u) \tan(u) \frac{du}{dx}$$

$$\csc(u) \quad -\csc(u) \cot(u) \frac{du}{dx}$$

$$\cot(u) \quad -\csc^2(u) \frac{du}{dx}$$

$$a^u \quad a^u \ln(a) \frac{du}{dx}$$

$$\log_a(u) \quad \frac{1}{u \ln a} \frac{du}{dx}$$

$$\sin^{-1}(u) \quad \frac{1}{\sqrt{1-u^2}} \frac{du}{dx}$$

$$\cos^{-1}(u) \quad \frac{-1}{\sqrt{1-u^2}} \frac{du}{dx}$$

$$\tan^{-1}(u) \quad \frac{1}{1+u^2} \frac{du}{dx}$$

Product Rule: $(f(x)g(x))' = f'(x)g(x) + f(x)g'(x)$

Quotient Rule: $\left(\frac{f(x)}{g(x)}\right)' = \frac{g(x)f'(x) - f(x)g'(x)}{g(x)^2}$.

Chain Rule: $(f(g(x)))' = f'(g(x))g'(x)$.

Also review implicit differentiation, logarithmic differentiation, related rates problems, linear approximations and differentials.