$$\ln(2x+3) = 7$$

$$e^{\ln x} = y \qquad e \qquad e^{7} = 2x+3$$

$$\frac{e^{7}-3}{2} = x$$

$$\frac{d}{dx} 2e^{3x^2-2}$$

$$2e^{3x^2-2}(6x)$$

$$12xe^{3x^2-2}$$

$$\frac{d}{dx} \ln u = \frac{du}{u}$$

$$\frac{d}{dx} e^u = e^u du$$

$$\int \frac{d}{dx} e^u = \int e^u du$$

$$e^u + C = \int e^u du$$

$$\int e^u du = e^u + C$$

$$\int e^{\tan 2x} \cdot \sec^2 2x \, dx$$

$$u = \tan 2x$$

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

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

$$\frac{du}{2} = \sec^2 2x \, dx$$

$$\int e^u \frac{du}{2}$$

$$\frac{1}{2}\int e^u du = \frac{1}{2} e^u + C$$

$$\frac{1}{2} e^{\tan 2x} + C$$

Euler's Equation

$$e^{\pi i} + 1 = 0$$

54. $y = \ln\sqrt{\frac{x+1}{x-1}}$

$$y = \ln\left(\frac{x+1}{x-1}\right)^{1/2}$$

$$y = \frac{1}{2}\ln\left(\frac{x+1}{x-1}\right)$$

$$y = \frac{1}{2}\ln(x+1) - \frac{1}{2}\ln(x-1)$$

$$y' = \frac{1}{2}\cdot\frac{1}{x+1} - \frac{1}{2}\cdot\frac{1}{x-1}$$

$$y' = \frac{1}{2(x+1)} - \frac{1}{2(x-1)}$$

$$y' = \frac{x-1-(x+1)}{2(x+1)(x-1)}$$

$$y' = \frac{\cancel{x}-1-\cancel{x}-1}{2(x^2-1)}$$

$$y' = \frac{-2}{2(x^2-1)} = \frac{-1}{x^2-1}$$