

$$\textcircled{1} \frac{d}{dx} \left[\ln \left(2e^{-5x^2/3} \sqrt{\tan x} \right) \right] \quad \textcircled{2} \int \frac{\sec x \tan x}{2-3\sec x} dx$$

$$\textcircled{3} \int_{-1}^1 \frac{2-x}{x+1} dx \quad \textcircled{4} \int \frac{\csc(5x)}{8} dx$$

$$\textcircled{1} \ln 2 + \ln e^{-5x^2} + \ln(\tan x)^{1/3}$$

$$0 + \frac{e^{-5x^2}(-10x)}{e^{-5x^2}} + \frac{1}{3} \left(\frac{\sec^2 x}{\tan x} \right)$$

$$\boxed{-10x + \frac{\sec^2 x}{3 \tan x}}$$

$$\textcircled{2} u = 2-3\sec x \quad \frac{du}{dx} = \frac{-3\sec x \tan x}{-3}$$

$$-\frac{1}{3} \int \frac{1}{u} du = -\frac{1}{3} \ln|u| + C$$

$$\boxed{-\frac{1}{3} \ln|2-3\sec x| + C}$$

$$\textcircled{3} u = x+1 \quad du = dx$$

$$x = u-1$$

$$\int_0^2 \frac{2-(u-1)}{u} du$$

$$\int_0^2 \frac{3-u}{u} du = \int_0^2 \left(\frac{3}{u} - 1 \right) du$$

$$\left[3 \ln|u| - u \right]_0^2$$

$$(3 \ln 2 - 2) - (3 \ln 0 - 0)$$

Not Possible

$$\textcircled{4} u = 5x \quad \frac{du}{dx} = \frac{5}{5}$$

$$\frac{1}{40} \int \csc u du$$

$$\frac{1}{40} (-\ln|\csc u + \cot u|) + C$$

$$\boxed{-\frac{1}{40} \ln|\csc 5x + \cot 5x| + C}$$

$$\textcircled{5} \int \frac{e^{5/x^3}}{6x^4} dx$$

$$\textcircled{6} y' = \frac{\ln x - e^x}{x^2} \quad (1, -3)$$

Equation of tangent line

$$\textcircled{7} y' = \frac{\ln(x^2)}{x+4}$$

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

Extremas & Pof I

$$\textcircled{5} u = 5x^{-3}$$

$$\frac{du}{-15} = \frac{dx}{x^4}$$

$$\frac{du}{-15} = \frac{-5x^{-4} dx}{-15}$$

$$\textcircled{6} y'(1) = \frac{\ln 1 - e^1}{1^2} = \frac{0 - e}{1} = -e$$

$$-\frac{1}{90} \int e^u du = -\frac{1}{90} e^{5/x^3} + c$$

$$y + 3 = -e(x - 1)$$

$\textcircled{7}$ critical #'s

$$2 \ln x = 0 \quad x + 4 = 0$$

$$e^0 = x$$

$$x = 1$$

$$x = -4$$

$$y''(1) = \frac{2(1)^2 - 3}{7-1} = -\frac{1}{6}$$

$x = 1$ Rel Max

$$y'(-4) = \frac{2(-4)^2 - 3}{7 - (-4)} = +\frac{29}{11}$$

$x = -4$ Rel Min

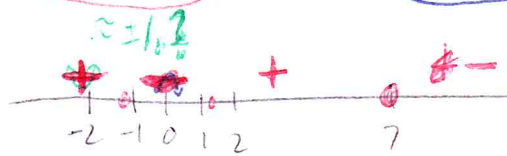
possible Pof I

$$2x^2 - 3 = 0 \quad 7 - x = 0$$

$$x = \pm \sqrt{\frac{3}{2}}$$

$$x = 7$$

all are Pof I



$$y''(-2) = \frac{2(-2)^2 - 3}{7 - (-2)} = +\frac{5}{9}$$

$$y''(0) = \frac{2(0)^2 - 3}{7-0} = -\frac{3}{7}$$

$$y''(2) = \frac{2(2)^2 - 3}{7 - (2)} = +\frac{5}{5} = +$$

$$y''(8) = \frac{2(8)^2 - 3}{7-8} = -\frac{125}{-1} = +$$