Calculus Worksheet #2 Unit 10 Selected Solutions

Find dy/dx for each of the following functions.

1. $y = \ln|2x|$

$dy/dx = \dfrac{1}{2x}(2)$

$\boxed{dy/dx = \dfrac{1}{x}}$

3. $y = \ln(x^2)$

$dy/dx = \dfrac{1}{x^2}(2x)$

$\boxed{dy/dx = \dfrac{2}{x}}$

6. $y = \text{Log}|\tan x|$

$dy/dx = \dfrac{1}{\ln 10}\dfrac{1}{\tan x}(\sec^2 x)$

$\boxed{dy/dx = \dfrac{1}{\ln 10}(\cot x)(\sec^2 x)}$

13. $y = \ln|1 - x^2|$

$dy/dx = \dfrac{1}{1 - x^2}(-2x)$

$\boxed{dy/dx = \dfrac{-2x}{1 - x^2}}$

Integrate each of the following.

15. $\displaystyle\int \dfrac{dx}{5x - 1} = \dfrac{1}{5}\int \dfrac{5dx}{5x - 1} = \boxed{\dfrac{1}{5}\ln|5x - 1| + C}$

19. $\displaystyle\int \cot x \, dx = \int \dfrac{\cos x \, dx}{\sin x} = \boxed{\ln|\sin x| + C}$