

Differentiation Quiz ... Set 5

The following problems involve e^x and $\ln x$. To do them, you need to know:

$$(e^x)' = e^x \quad (\ln x)' = \frac{1}{x} \quad \frac{d \arctan x}{dx} = \frac{1}{1+x^2}$$

Find the derivative:

1. $f(x) = x \ln(e^{2x} + 2)$
2. $y = \arctan(e^{4x} + 3x)$
3. $y = \ln(x + \sqrt{x^2 - 1})$
4. $y = 3 \ln(x \sin x)$
5. $y = e^{-\tan(x+1)}$
6. $y = \sin(\ln x + 3x^2)$
7. $y = \frac{e^{x^2}}{x+3}$
8. $y = \sqrt{\ln x + 1}$
9. $y = e^{\sqrt{x^2+1}}$
10. $y = \ln\left(\frac{2(1+x^2)}{x^4}\right)$
11. $y = \ln e^{2x}$
12. $y = \arctan(x - 1) + \sqrt{\sin(\ln x)}$
13. $y = x^2 e^{3x^2 - 5x}$
14. $y = \ln(4x + 6) e^{5x}$