27.5 and 27.6 Derivatives of Logarithmic and Exponential Functions

Differentiate the following:

1. $y = \log_3 7x$

2. $y = \ln(2x^3 - 4)$

3. $y = \ln(3x^2 + 5x - 1)$

4. $y = \ln(\sec^2 x)$

5. $y = \ln(5x^2 - 3)^4$

6. $y = 3x^6 \ln \sqrt{x}$

7. $y = \cos^{-1}(\ln x^2)$

8. $y = 10^{x^2}$

9. $y = \dfrac{7}{e^x}$

10. $y = 5\sqrt{x}e^{\pi x}$

11. $y = 4\ln(e^x + 2)\sin\frac{1}{2}x$

12. $y = 0.3e^{5x}\ln\csc x$

13. Use Newton's method to find the solution of $e^x = \sin x$ between -4 and -3.