MATH1510 Gateway Exam 6

I. Write the formal definition of $f(x)$

II. Use the rules of differentiation to find the derivative (e.g. $f(x)$, $\dfrac{dy}{dx}$, or y).

1. $f(x) = 10x^5 + 50x + 50$

2. $f(x) = x^3 + 3^x$

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

4. $f(x) = e^{3x}\tan(x)$

5. $f(x) = \dfrac{2}{x} - \dfrac{1}{x^4}$

6. $f(x) = \cos(7x)$

7. $f(x) = 2\tan^{-1}(x) - 3\sin^{-1}(x)$

8. $f(x) = \dfrac{1 + 2x}{1 + 3x}$

9. $y = \sqrt{3} + 8\sqrt{x}$

10. $y = (1 + 4x^2)^5$

11. $y = \log_{10}(x + 1)$

12. $y = 5x$

13. $y = 2e^{-3x}$

14. $y = \tan(4x)$

15. Find $\dfrac{d}{dx}\left(x^3 y^5\right)$