

MAC2241
Suggested problems on Chapter 3 material
(derivatives)

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1. Find the derivative of the function using the definition of derivative.

$$f(x) = \frac{1}{2}x - \frac{1}{3}$$

2. Find the derivative of the function using the definition of derivative.

$$f(x) = 5x - 9x^2$$

3. Find the derivative of the function using the definition of derivative.

$$f(x) = \frac{1}{\sqrt{x}}$$

4. Find the derivative of the function using the definition of derivative.

$$f(x) = x^4$$

5. Find $f'(x)$.

$$f(x) = x - 3 \sin x$$

6. Find $f'(x)$.

$$f(x) = 3e^x + \frac{4}{x^{1/3}}$$

7. Find $f'(x)$.

$$f(x) = \sqrt{x}(x - 1)$$

8. Find $f'(x)$.

$$f(x) = \frac{x^2 - 3x + 1}{x^2}$$

9. Find $f'(x)$.

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

10. Find $f'(x)$.

$$f(x) = e^x \cos x$$

11. Find $f'(x)$.

$$f(x) = \frac{x^3}{1 - x^2}$$

12. Find $f'(x)$.

$$f(x) = \frac{1 - xe^x}{x + e^x}$$

13. Find $f'(x)$.

$$f(x) = \frac{1 - \sec x}{\tan x}$$

14. Find $f'(x)$.

$$f(x) = (x^4 + 3x^2 - 2)^5$$

15. Find $f'(x)$.

$$f(x) = \sqrt{1 - 2x}$$

16. Find $f'(x)$.

$$f(x) = (2x - 5)^4(8x^2 - 5)^{-3}$$

17. Find $f'(x)$.

$$f(x) = e^{x \cos x}$$

18. Find $f'(x)$.

$$f(x) = 10^{1-x^2}$$

19. Find $f'(x)$.

$$f(x) = \sec^2 x + \tan^2 x$$

20. Find $f'(x)$.

$$f(x) = \frac{x}{\sqrt{x^2 + 1}}$$

21. Find $f'(x)$.

$$f(x) = x \ln x - x$$

22. Find $f'(x)$.

$$f(x) = \sin(\ln x)$$

23. Find $f'(x)$.

$$f(x) = (\ln x)^{1/5}$$

24. Find $f'(x)$.

$$f(x) = (\ln(1 + e^x))^2$$

25. Find $f'(x)$.

$$f(x) = \sin x \ln(5x)$$