Homework Questions 2 – Finding the Derived Function

Differentiate the following, leave your answer in index form

1. $f(x) = x^2$

$$f'(x) = 2x$$

2. $f(x) = x^{-2}$

$$f'(x) = -2x^{-3}$$

3. $f(x) = x^{-6}$

$$f'(x) = -6x^{-7}$$

4. $f(x) = x^{\frac{1}{4}}$

$$f'(x) = \frac{1}{4}x^{-\frac{3}{4}}$$

5. $f(x) = \sqrt[3]{x}$

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

6. $f(x) = \sqrt[6]{x}$

$$f'(x) = \frac{1}{6}x^{-\frac{5}{6}}$$

7. $f(x) = \frac{1}{x^4}$

$$f'(x) = -4x^{-5}$$

8. $f(x) = \frac{1}{x^5}$

$$f'(x) = -5x^{-6}$$

9. $f(x) = \frac{1}{\sqrt[4]{x}}$

$$f'(x) = -\frac{1}{4}x^{-\frac{5}{4}}$$

10. $f(x) = \frac{1}{\sqrt[6]{x}}$

$$f'(x) = -\frac{1}{6}x^{-\frac{7}{6}}$$

11.
$$f(x) = \frac{x^5}{x^2}$$

$$f'(x) = 3x^2$$

12.
$$f(x) = \frac{x^7}{x^3}$$

$$f'(x) = 4x^3$$

13.
$$f(x) = \frac{x^2}{x^5}$$

$$f'(x) = -3x^{-4}$$

14.
$$f(x) = \frac{x}{x^3}$$

$$f'(x) = -2x^{-3}$$

15. $f(x) = x^2 \times x^5$

$$f'(x) = 7x^6$$

16. $f(x) = x^4 \times x^5$

$$f'(x) = 9x^8$$

17. $f(x) = 5x^4$

$$f'(x) = 20x^3$$

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

$$f'(x) = 6x^2$$

19.
$$f(x) = \frac{3}{x^2}$$

$$f'(x) = -6x^{-3}$$

20.
$$f(x) = \frac{5}{\sqrt[3]{x^2}}$$

$$f'(x) = -\frac{10}{3}x^{-\frac{5}{3}}$$