Differentiation – Quotients 2

1. $y = \dfrac{3}{x}$. Find the value of $\dfrac{dy}{dx}$ when $x = 1$.

2. $f(x) = \dfrac{24}{\sqrt{x}}$. Calculate $f'(4)$.

3. $y = \dfrac{1}{4x^3}$. Find $\dfrac{dy}{dx}$

4. $y = x - \dfrac{16}{\sqrt{x}}$. Calculate the value of $\dfrac{dy}{dx}$ when x is replaced by 4.

5. $f(x) = \sqrt[3]{x} - \dfrac{1}{\sqrt{x}}$. Find $f'(x)$.

6. $f(x) = \sqrt{x} + \dfrac{2}{x^2}$. Calculate $f'(4)$.

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

8. $y = \dfrac{x - 2}{x^2}$. Calculate $\dfrac{dy}{dx}$ when $x = 2$.

9. $f(x) = \dfrac{x^2 + 32}{\sqrt{x}}$. Find $f'(16)$.

10. $y = \dfrac{x^2 - x^3}{\sqrt{x}}$. Find the value of $\dfrac{dy}{dx}$ when $x = 4$.

11. $y = 3x^2 + \dfrac{6}{\sqrt[3]{x}}$. Calculate $\dfrac{dy}{dx}$.

12. $f(x) = \dfrac{8x - 2x^4}{x\sqrt{x}}$. Find the value of $f'(4)$.

13. $y = \dfrac{10 + 3x}{5\sqrt{x}}$. Find $\dfrac{dy}{dx}$.

14. $f(x) = \dfrac{3\sqrt{3}}{2}\left(x + \dfrac{16}{x}\right)^2$.

    (a) Find $f'(x)$.

    (b) Show that if $f'(x) = 0$ then $x = 2$.