

Note

$$x^{-3} = \frac{1}{x^3}$$

$$\frac{1}{x^{-3}} = x^3$$

$$y = \sqrt{x} = x^{\frac{1}{2}} \quad x=4$$

$$y' = \frac{1}{2} x^{\frac{1}{2} - \frac{2}{2}} = \frac{1}{2} x^{-\frac{1}{2}} = \frac{1}{2x^{\frac{1}{2}}} = \frac{1}{2\sqrt{x}}$$

$$x^{-11} = \frac{1}{x^{11}}$$

$$y = \frac{1}{x^{10}} = x^{-10}$$

$$y' = -10x^{-11} = \frac{-10}{x^{11}}$$
$$= -10 \cdot \frac{1}{x^{11}}$$

$$y = \frac{4}{x^7} = 4x^{-7}$$

$$y' = -28x^{-8} = -\frac{28}{x^8}$$

$$\begin{aligned}
 y &= \frac{4}{(3x)^3} = \frac{4}{3^3 x^3} = \frac{4}{27x^3} = \frac{4x^{-3}}{27} \\
 &= \frac{4}{27} \cdot x^{-3} \\
 &= \frac{4}{27} x^{-3}
 \end{aligned}$$

$$\begin{aligned}
 y' &= \frac{-3}{1} \cdot \frac{4}{27} x^{-3-1} = \frac{-4}{9} x^{-4} \\
 &= \frac{-4}{9x^4}
 \end{aligned}$$

$$Y = \sqrt[5]{x^3} = (x^3)^{1/5} = x^{3/5}$$

$$Y' = \frac{3}{5} x^{3/5 - 1/5}$$

$$= \frac{3}{5} x^{2/5} = \frac{3}{5} x^{2/5}$$

$$y = \frac{7}{(3x)^{-2}} = \frac{7}{3^{-2}x^{-2}} = 7 \cdot 3^2 \cdot x^2 = 63x^2$$

OR

$$y = \frac{7}{(3x)^{-2}} = 7(3x)^2 = 7(3^2x^2)$$

$$y' = 126x$$