

Answer on Question #47288 – Math – Calculus

$y = \sqrt{x} + \frac{1}{\sqrt{x}}$ differentiate it w.r.t x

Solution

$$y = \sqrt{x} + \frac{1}{\sqrt{x}}$$

$$\begin{aligned} y' &= \left(\sqrt{x} + \frac{1}{\sqrt{x}} \right)' = (\sqrt{x})' + \left(\frac{1}{\sqrt{x}} \right)' = (x^{1/2})' + (x^{-1/2})' \\ &= \frac{1}{2}x^{-1/2} + \left(-\frac{1}{2} \right) x^{-3/2} = \frac{x^{-\frac{1}{2}}}{2} (1 - x^{-1}) = \frac{1}{2\sqrt{x}} \left(1 - \frac{1}{x} \right) \end{aligned}$$