

$$y = \frac{4x^2 + 2x + 2}{\sqrt{x}} = 4x^{3/2} + 2x^{1/2} + 2x^{-1/2} \quad \Rightarrow$$

$$y' = 4 \left(\frac{3}{2} \right) x^{1/2} + 2 \left(\frac{1}{2} \right) x^{-1/2} + 2 \left(-\frac{1}{2} \right) x^{-3/2} = 6\sqrt{x} + \frac{1}{\sqrt{x}} - \frac{1}{x\sqrt{x}}$$

[note that $x^{3/2} = x^{2/2} \cdot x^{1/2} = x\sqrt{x}$]

The last expression can be written as $\frac{6x^2}{x\sqrt{x}} + \frac{x}{x\sqrt{x}} - \frac{1}{x\sqrt{x}} = \frac{6x^2 + x - 1}{x\sqrt{x}}$.