Find the derivative of $f(x) = x \cdot \sqrt{x}$

1) Rewrite first to show the exponent rather than the root: $f(x) = x \cdot x^{\frac{1}{2}}$

2) Multiply the x by the $x^{\frac{1}{2}}$ to get: $f(x) = x^{1} \cdot x^{\frac{1}{2}} = x^{\frac{2}{2}+\frac{1}{2}} = x^{\frac{3}{2}}$

3) Now you can differentiate with the power rule. Bring the $\frac{3}{2}$ down, and subtract 1 from the exponent.

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

4) Lastly, rewrite this using the root symbol: $f'(x) = \frac{3}{2} \cdot \sqrt{x}$