$$x y' + 2y = \sqrt{x}$$

Find integrating factor $e^{\int 2\,dx} = e^{2x}$.

Mult. by int. factor to make LHS a derivative:

$$e^{2x}(xy' + 2y) = \frac{d}{dx}\left(e^{2x} y\right) = \sqrt{x}$$

Now solve by integrating.

$$e^{2x} y = \frac{2}{3} x^{3/2} + C$$

$$\boxed{y(x) = \frac{2}{3} x^{3/2} e^{-2x} + \tilde{C}}$$