Dividing the problem in functions:

$$\mathbf{f(x)} = f$$
$$\mathbf{g(x)} = x$$
$$\mathbf{h(x)} = \sqrt{x}$$

The problem can be factored by the product rule:

$$xf' + f = xf' + 1f = g(x)f'(x) + g'(x)f(x) = (g(x)f(x))'$$
$$xf' + f = \mathbf{(xf)'}$$

Replacing the result in the original equation:

$$(xf)' = \sqrt{x}$$
$$xf = \int \sqrt{x}$$
$$f = \frac{\int \sqrt{x}}{x}$$

Since $\sqrt{x} = x^{\frac{1}{2}}$ :

$$\int x^{\frac{1}{2}} = \frac{2x^{\frac{3}{2}}}{3} + C$$

$$f = \frac{\frac{2x^{\frac{3}{2}}}{3} + C}{x} = \frac{2x^{\frac{3}{2}}}{3x} + \frac{C}{x} = \frac{2x^{\frac{1}{2}}}{3} + \frac{C}{x} = \frac{2\sqrt{x}}{3} + \frac{C}{x}$$

Since **f(x) = f**, the solution is:

$$\mathbf{f(x) =} \frac{2\sqrt{x}}{3} + \frac{C}{x}$$