

$$y' = 3\sqrt{x} + 2e^x, \quad y(0) = 5$$

Integrate:

$$\begin{aligned} y &= \int (3x^{\frac{1}{2}} + 2e^x) dx \\ &= 2x^{\frac{3}{2}} + 2e^x + C \end{aligned}$$

Apply initial condition:

$$y(0) = 2(0)^{\frac{3}{2}} + 2e^0 + C = 5$$

$$2 + C = 5$$

$$C = 3$$

so, $y = 2x^{\frac{3}{2}} + 2e^x + 3$