$$\int \frac{1}{x\sqrt{x}}\,dx = \int \frac{1}{x(x^{\frac{1}{2}})}\,dx$$

$$\sqrt[2]{x^1} = x^{\frac{1}{2}}$$

$$\int \frac{1}{x^{\frac{2}{2}}(x^{\frac{1}{2}})}\,dx = \int \frac{1}{x^{\frac{3}{2}}}\,dx$$

$$\sqrt{x^3} = x^{\frac{3}{2}}$$

$$\sqrt[3]{(x-1)^2} = (x-1)^{\frac{2}{3}}$$

$$\int x^{-\frac{3}{2}}\,dx = \frac{x^{-\frac{3}{2}+\frac{2}{2}}}{-\frac{3}{2}+\frac{2}{2}}$$

$$\int x^n = \frac{x^{n+1}}{n+1}$$

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