

$$\int x \sqrt{2x-1} dx$$

$$u = 2x - 1$$

$$u + 1 = 2x$$

$$\frac{du}{2} = \frac{\cancel{2} dx}{\cancel{2}}$$

$$x = \frac{u+1}{2}$$

$$\int \left(\frac{u+1}{2} \right) u^{1/2} \cdot \frac{du}{2}$$

$$\int \frac{1}{4} (u+1)(u^{1/2}) du$$

$$\int \frac{1}{4} (u^{3/2} + u^{1/2}) du$$

$$\frac{1}{4} \int (u^{3/2} + u^{1/2}) du$$

$$\frac{1}{4} \left(\frac{2u^{5/2}}{5} + \frac{2u^{3/2}}{3} + C \right)$$

$$\frac{(2x+1)^{5/2}}{10} + \frac{(2x-1)^{3/2}}{6} + C$$