

972)

$$\int_1^2 (x-1)(2-x)^{1/2} dx$$

Let  $u = 2-x$

$\therefore x = 2-u$

$\frac{du}{dx} = -1 \Rightarrow \underline{-du = dx}$

$\forall \exists \leftarrow$   
 $\therefore$

$$\int (2-u-1) \cdot u^{1/2} du$$

$$= \int (1-u) u^{1/2} du$$

$$= \int u^{1/2} - u^{3/2} du$$

$$= \left[ \frac{2}{3} u^{3/2} - \frac{2}{5} u^{5/2} \right]$$

$$= \left[ \frac{2}{3} (2-x)^{3/2} + \frac{2}{5} (2-x)^{5/2} \right]_1^2$$

$$\underbrace{\frac{-2}{3}(0) + \frac{2}{5}(0)^{5/2}}_{F(b)} - \underbrace{\left( \frac{-2}{3}(1)^{3/2} + \frac{2}{5}(1)^{5/2} \right)}_{F(a)} = \frac{-2}{3} + \frac{2}{5} = \frac{-10}{15} + \frac{6}{15} = \frac{-4}{15}$$

$$0 - \left( \frac{-4}{15} \right) = \frac{4}{15}$$