

$$(c) \int_0^1 \frac{x}{\sqrt{1-x^2}} dx = \lim_{S \rightarrow 1^-} \int_0^S \frac{x}{\sqrt{1-x^2}} dx$$

$$u = 1-x^2 \quad du = -2x dx$$

$$\int_0^1 \frac{x}{\sqrt{1-x^2}} dx = \lim_{S \rightarrow 1^-} \frac{-1}{2} \int \frac{du}{\sqrt{u}}$$

$$= \lim_{S \rightarrow 1^-} -\sqrt{u}$$

$$= \lim_{S \rightarrow 1^-} -\sqrt{1-x^2} \Big|_0^S$$

$$= 1$$

2. Evaluate the following integral: $\int \frac{5x^2 + 4x + 3}{x(x+1)^2} dx$