Now, we can evaluate the definite integral using the given limits of integration;

$$\int_0^4 \frac{1}{\sqrt{x}}\, dx = [2\sqrt{x}]_0^4$$

Substituting the upper limit :- $[2\sqrt{4}]$

Simplifying, we have! $[2 \cdot 2] = 4$

Substituting the lower limit :- $[2\sqrt{4}] - [2\sqrt{0}]$

Simplifying further :- $4 - 0 = 4$

Answer :- 4

8) Find the indefinite integral :-

$$\int \frac{x^2+1}{x}\, dx$$

To find the indefinite integral, we can divide the numerator by the denominator using polynomial long division. Performing the division, we get :-

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

Now, we can integrate each term ~~SA~~ separately:

$$\int x\, dx = \frac{x^2}{2} + C_1$$

$$\int \frac{1}{x}\, dx = \ln|x| + C_2$$