

Anti derivative of fractional function.

$$\int \frac{x+3}{x-4} dx$$

Solution:

$$\int \frac{x+3}{x-4} dx = \int \frac{x+0+3}{x-4} dx$$

$$= \int \frac{x+(-4+4)+3}{x-4} dx$$

$$= \int \frac{x-4+4+3}{x-4} dx$$

$$= \int \frac{x-4+7}{x-4} dx$$

$$= \int \left(1 + \frac{7}{x-4} \right) dx$$

$$= \int (1) dx + \int \left(\frac{7}{x-4} \right) dx$$

$$= x + 7 \int \frac{1}{x-4} dx$$

$$= x + 7 \ln|x-4| + C$$