

$$\int \frac{x^2 - 2x + 1}{x^2 + 1} dx = \text{An indefinite integral of } x \text{ square minus two } x \text{ plus } 1 \text{ divided by } x \text{ square plus one, } dx$$

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

$$= \int 1 dx - \int \frac{(x^2 + 1)'}{(x^2 + 1)} dx =$$

In this step we have to separate an integral into two different integrals. We have to have the same value in the numerator and in the denominator of the first integral. Now we can cancel the numerator and the denominator of the first integral.

Now I have to notice that  $2x$  is equal the derivative of  $x$  square plus one. Secondly I have to follow the formula and compute the integral. Knowing the formula:

$$\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + C \text{ we have:}$$

$$= x - \ln |x^2 + 1| + C$$

$x$  minus the natural logarithm of the absolute value of  $x$  square plus one and plus a constant  $C$

**! DON'T FORGET ABOUT THE CONSTANT**

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EPM 1