

12.30 a

tisdag 20 december 2022

20:15

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

$$2 = (Ax+B)(x-1) + C(x^2+1) = Ax^2 - Ax + Bx - B + Cx^2 + C =$$

$$= (A+C)x^2 + (-A+B)x + C - B$$

$$A + C = 0$$

$$B - A = 0$$

$$C - B = 2$$

$$B + C = 0$$

$$2C = 2 \quad \begin{array}{|l} A = -1 \\ C = 1 \\ B = -1 \end{array}$$

$$\int \frac{-(x+1)}{x^2+1} + \frac{1}{x-1} dx = \ln|x-1| - \int \frac{x}{x^2+1} dx - \int \frac{1}{x^2+1} dx = \ln|x-1| - \frac{1}{2} \ln(x^2+1) - \arctan x + C$$