

ESERCITAZIONE:

SEMPLIFICA LE SEGUENTI FRAZIONI ALGEBRICHE DOPO AVER DETERMINATO LE C.E.

1)

$$\frac{3x - 3y}{6x^2 + 6x - 6xy - 6y} =$$

$$= \frac{\overset{1}{\cancel{3}}(\cancel{x-y})}{\underset{2}{\cancel{6}}(\cancel{x-y})(x+1)} = \frac{1}{2(x+1)} = \frac{1}{2x+2}$$

C.E. $x-y \neq 0$ $x \neq y$ $x \neq -1$

SCOMPOSIZIONE:

$$\begin{aligned} 6x^2 + 6x - 6xy - 6y &= 6(x^2 + x - xy - y) = \\ &= 6[x(x+1) - y(x+1)] = 6(x-y)(x+1) \end{aligned}$$

$$\begin{aligned} 6x^2 + 6x - 6xy - 6y &= 6x(x+1) - 6y(x+1) = \\ &= (6x - 6y)(x+1) = 6(x-y)(x+1) \end{aligned}$$

2)

$$\frac{x^2y - y^3}{x^3 - xy^2} = \frac{y(x^2 - y^2)}{x(x^2 - y^2)} = \frac{y}{x}$$

c.e. $x \neq 0$
 $x^2 - y^2 \neq 0$

$$(x-y)(x+y) = 0$$

$$x-y \neq 0 \quad x \neq +y$$

$$x+y \neq 0 \quad x \neq -y$$

$x \neq \pm y$

3)

$$\frac{2x^2 - x}{x^2 - 2x^3} = \frac{x(2x-1)}{x^2(1-2x)} = \frac{\cancel{x(2x-1)}}{-x^2 \cancel{(2x-1)}} = -\frac{1}{x}$$

c.e. $1-2x \neq 0$
 $x^2 \neq 0$

$x \neq \frac{1}{2}$

$x \neq 0$

NOTA: $x^2(1-2x)$ è sbagliato scrivere $x^2 - (2x-1)$.
 Si può scrivere $x^2[-(2x-1)]$

SEMPLIFICA LA SEGUENTE ESPRESSIONE

4)

$$\left(\frac{1}{x^2 - 2x} - \frac{1}{x^2 + 2x} - \frac{2}{x^2 - 4} \right)^{-3} \cdot \left(\frac{1}{2x^2 + 4x} \right)^2 \cdot \frac{(-2)^5}{x} \cdot \frac{x+2}{x}$$

$$= \left(\frac{1}{x(x-2)} - \frac{1}{x(x+2)} - \frac{2}{(x-2)(x+2)} \right)^{-3} \cdot \left(\frac{1}{2x(x+2)} \right)^2 \cdot \frac{(-2)^5}{x} \cdot \frac{x+2}{x}$$

$$\cdot \frac{-32}{x} \cdot \frac{x}{x+2}$$

$$= \left(\frac{x+2 - (x-2) - 2x}{x(x-2)(x+2)} \right)^{-3} \cdot \frac{1}{4x^2(x+2)^2} \cdot \frac{-32}{x} \cdot \frac{x}{x+2}$$

$$= \left(\frac{\cancel{x+2} - \cancel{x+2} - 2x}{x(x-2)(x+2)} \right)^{-3} \cdot \frac{-8}{x^2(x+2)^3} =$$

$$\Rightarrow \left[\frac{4-2x}{x(x-2)(x+2)} \right]^{-3} \cdot \frac{-8}{x^2(x+2)^3} \Rightarrow$$

C.E

$x \neq 0$
 $x \neq -2$

$$\Rightarrow \left[\frac{2(2-x)}{x(x-2)(x+2)} \right]^{-3} \cdot \frac{-8}{x^2(x+2)^3} \Rightarrow$$

$$\Rightarrow \left[\frac{-2}{x(x+2)} \right]^{-3} \cdot \frac{-8}{x^2(x+2)^3} \Rightarrow$$

$$\Rightarrow \left[\frac{x(x+2)}{2} \right]^3 \cdot \frac{-8}{x^2(x+2)^3} \Rightarrow$$

FACTORIVO

$$\Rightarrow \frac{x^3}{8} \cdot \frac{-8}{x^2(x+2)^3} \Rightarrow$$

$$\Rightarrow x$$