PAG 506 n° 106

$$\frac{x^4-3x^3-4x^2+12x}{x^4-5x^3+6x^2} = \frac{x(x+2)(x-2)(x-3)}{x^2(x-3)(x-2)} = \frac{x+2}{x}$$

C.E
$x \neq 0$
$x \neq 3$
$x \neq +2$

$x^3(x-3)-4x(x-3) = (x-3)(x^3-4x) = x(x^2-4)(x-3) = x(x-2)(x+2)(x-3)$

$x^2(x^2-5x+6) = x^2(x-3)(x-2)$

PAG 506 n° 110

$$\frac{y^5-9y^3}{(y+3)(y^2-5y+6)} = \frac{y^3(y-3)(y+3)}{(y+3)(y-3)(y-2)} = \frac{y^3}{y-2}$$

C.E
$y \neq \pm 3$
$y \neq 2$

$y^3(y^2-9) = y^3(y-3)(y+3)$

PAG 506 n° 122

$$\frac{27-x^3}{x^2-9} = \frac{(3-x)(9+x^2+6x)}{(x-3)(x+3)} = -\frac{(x-3)(x^2+9+6x)}{(x-3)(x+3)} = -\frac{x^2+9+6x}{x+3}$$

CAMBIO SEGNO A $(3-x)$ E PONGO IL SEGNO IN LINEA DI FRAZIONE

C.E $x \neq \pm 3$

PAG 510 n° 192

$$\frac{3y}{2y-1} - \frac{4-y}{1-2y} = \frac{3y}{2y-1} - \frac{4-y}{-(2y-1)} = \frac{3y}{2y-1} + \frac{4-y}{2y-1} =$$

CAMBIO DI SEGNO

IL SEGNO (−) AL DENOMINATORE SI MOLTIPLICA CON IL SEGNO "IN LINEA DI FRAZIONE"

$$= \frac{3y+4-y}{2y-1} = \frac{2y+4}{2y-1}$$

m.c.m.

NON È NECESSARIO RACCOGLIERE IL (2) AL NUMERATORE PERCHÉ NON SI SEMPLIFICA

PAG 510 n° 197

$$\frac{x^2+1}{x-1}+\frac{2x}{1-x}=\boxed{\frac{x^2+1}{x-1}+\frac{2x}{-(x-1)}}=\frac{x^2+1}{x-1}-\frac{2x}{x-1}=\frac{x^2+1-2x}{x-1}=$$

FATTORIZZO

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

C.E. $x\neq 1$

PAG 511 n° 216

$$\frac{e-1}{e^2-1}+\frac{2e+2}{e^2+2e+1}=\frac{e-1}{(e-1)(e+1)}+\frac{2e+2}{(e+1)^2}=$$

$$=\frac{(e-1)(e+1)+(2e+2)(e-1)}{(e+1)^2(e-1)}=$$

C.E. $e\neq\pm 1$

$$=\frac{e^2-1+2e^2-2e+2e-2}{(e+1)^2(e-1)}=\frac{3e^2-3}{(e+1)^2(e-1)}$$ SCOMPONGO PER SEMPLIFICARE

$$=\frac{3(e^2-1)}{(e+1)^2(e-1)}=\frac{3(e-1)(e+1)}{(e+1)^2(e-1)}=\frac{3}{e+1}$$

PAG 511 n° 219

$$\frac{x^2-2}{x^2-5x+6}-\frac{x-3}{x-2}+\frac{5}{x-3}=$$

C.E. $x\neq 3$, $x\neq 2$

$$=\frac{x^2-2}{(x-3)(x-2)}-\frac{x-3}{x-2}+\frac{5}{x-3}=$$

$$=\frac{x^2-2-(x-3)(x-3)+5(x-2)}{(x-3)(x-2)}=\frac{x^2-2-(x^2-6x+9)+5x-10}{(x-3)(x-2)}=$$

$$\frac{x^2-2-x^2+6x-9+5x-10}{(x-3)(x-2)}=\boxed{\frac{11x-21}{(x-2)(x-3)}}$$

PAG 515 N° 230

$$\frac{5-5x}{2x^3-3x^2+2x-3} \cdot \frac{x^4-1}{6-4x} \cdot \frac{4x^2-12x+9}{x^2-2x+1} =$$

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

$$x^2(2x-3)+(2x-3) = (x^2+1)(2x-3)$$

C.E
$x \neq \frac{3}{2}$
$x \neq 1$

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

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

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

PAG 518 n° 337

$$\frac{x^2+5x}{x^2-25} : \frac{5x}{2x-10} = \frac{x(x+5)}{(x+5)(x-5)} \cdot \frac{2(x-5)}{5x} = \frac{2}{5}$$

C.E
$x \neq 0$
$x \neq \pm 5$

PAG 518 n° 338

$$\frac{2x+1}{2x} : \left(\frac{x^2-1}{5x} : \frac{x+1}{6x+3}\right) = \frac{2x+1}{2x} : \left(\frac{(x-1)(x+1)}{4x} \cdot \frac{3(2x+1)}{x+1}\right)$$

$$= \frac{2x+1}{2x} : \frac{3(x-1)(2x+1)}{4x} = \frac{2x+1}{2x} \cdot \frac{4x}{3(x-1)(2x+1)} =$$

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

C.E
$x \neq -1$
$x \neq 1$
$x \neq -1/2$

PAT 518 Nº 351

$$\frac{24x^2y^3}{x^3-y^3} : \frac{3y^2}{x^2+xy+y^2} : \frac{2x^2}{x+y} =$$

$$= \frac{24x^2y^2}{(x-y)(x^2+y^2+xy)} \cdot \frac{x^2+xy+y^2}{3y^2} \cdot \frac{x+y}{2x^2} =$$

$$= \boxed{\frac{4(x+y)}{x-y}}$$

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

PAT 520 Nº 386

$$\left(\frac{3x^3y-6x^2y^2}{4x^2y^2-x^4}\right)^3 = \left(\frac{3x^2y(x-2y)}{x^2(4y^2-x^2)}\right)^3 = \left[\frac{3x^2y(x-2y)}{x^2(2y-x)(2y+x)}\right]^3 =$$

$$= \left[\frac{3y(x-2y)}{-(x-2y)(2y+x)}\right]^3 = \left(-\frac{3y}{2y+x}\right)^3 = -\frac{27y^3}{(x+2y)^3}$$

CAMBIO SEGNO

C.E
$x \neq \pm 2y$
$x \neq 0$

PAT 520 387

$$\left(\frac{a(a^2+a5+5^2)}{(a-5)(a^2+5^2+a5)}\right)^2 = \frac{a^2}{(a-5)^2}$$

C.E
$a \neq 5$

PAT 521 Nº 395

$$\left(\frac{y^2+2y+1}{3y-3}\right)^5 : \left[\left(\frac{y+1}{y-1}\right)^{-2}\right]^{-2} =$$

$$= \left(\frac{(y+1)^2}{3(y-1)}\right)^5 : \left(\frac{(y+1)}{y-1}\right)^4 =$$

$$\frac{(y+1)^{10\,6}}{243\,(y-1)^5} \cdot \frac{(y-1)^4}{(y+1)^4} = \frac{(y+1)^6}{243\,(y-1)}$$