



C.F.G.A. DE LA JONQUIÈRE

MATHÉMATIQUES

MAT 4106-1

TEST DE RENDEMENT

FACTORISATION ET
FRACTIONS ALGÈBRIQUES

Dimension 1

a) $d^3(28c^2 + 8c - 35cd - 10d^4)$

b) $8abc^2d^2(3a^3b^4c - 6bd^2 - 7a^2c^3)$

Dimension 2

a) $(5x - 2y)(2x + 1)$

b) $(b - y)(a - y)$

Dimension 3

a) $(x - 7)(x - 9)$

b) $(x - 6y)(x + y)$

Dimension 4

a) $(4a + 3)(2a + 7)$

b) $(s + 4t)(2s - 3t)$

Dimension 5

a) $(10y + 9)(10y - 9)$

b) $\left(2x + \frac{1}{4}y\right)\left(2x - \frac{1}{4}y\right)$

Dimension 6

a) $9(x + 2y)(x - 2y)$

b) $4(2a - b)(3c + 4)$

Dimension 7

a) $c(c+4d)(2c-3d)$

b) $2x(x-y)(3x-y)$

Dimension 8

a)

$$\frac{4-3a-a^2}{a^2-a}$$

$$\frac{-a^2-3a+4}{a^2-a}$$

$$\frac{-(a^2+3a-4)}{a^2-a}$$

$$\frac{-(a+4)(a-1)}{a(a-1)}$$

$$-\frac{a+4}{a}$$

b)

$$\frac{x^2-8xy+7y^2}{x^2-3xy-28y^2}$$

$$\frac{(x-y)(x-7y)}{(x+4y)(x-7y)}$$

$$\frac{x-y}{x+4y}$$

Dimension 9

$$\text{a) } \frac{x^2 - 9}{x^2 + 10x + 25} \times \frac{x + 5}{x + 3}$$

$$\frac{(x + 3)(x - 3)}{(x + 5)(x + 5)} \times \frac{x + 5}{x + 3}$$

$$\frac{x - 3}{x + 5}$$

$$\text{b) } \frac{3x^2 + 11x - 4}{12x^2 - 4x} \times \frac{4x^2 - 28x + 40}{x^2 - x - 20}$$

$$\frac{(x + 4)(3x - 1)}{4x(3x - 1)} \times \frac{4(x - 2)(x - 5)}{(x - 5)(x + 4)}$$

$$\frac{x - 2}{x}$$

Dimension 10

$$\text{a) } \frac{6y^2 + 8y - 8}{4y^2 + 16y + 16} \div \frac{y^2 - 8}{6y^2 - 48}$$

$$\frac{2(y + 2)(3y - 2)}{4(y + 2)(y + 2)} \div \frac{(y^2 - 8)}{6(y^2 - 8)}$$

$$\frac{2(y + 2)(3y - 2)}{4(y + 2)(y + 2)} \times \frac{6(y^2 - 8)}{(y^2 - 8)}$$

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

Dimension 10

$$\text{b) } \frac{x^2 - 25}{x^2 + 7x + 10} \div \frac{xy - 5y}{xy + 2y}$$

$$\frac{(x+5)(x-5)}{(x+5)(x+2)} \div \frac{y(x-5)}{y(x+2)}$$

$$\frac{(x+5)(x-5)}{(x+5)(x+2)} \times \frac{y(x+2)}{y(x-5)}$$

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Dimension 11

$$\text{a) } \frac{1}{x+y} + \frac{2y}{x^2 - y^2}$$

$$\frac{1}{x+y} + \frac{2y}{(x+y)(x-y)}$$

$$\frac{1(x-y) + 2y(1)}{(x+y)(x-y)}$$

$$\frac{x-y+2y}{(x+y)(x-y)}$$

$$\frac{x+y}{(x+y)(x-y)}$$

$$\frac{1}{x-y}$$

Dimension 11

$$\text{b) } \frac{2}{p^2 - 2p - 24} + \frac{5p}{p+4}$$

$$\frac{2}{(p-6)(p+4)} + \frac{5p}{p+4}$$

$$\frac{2(1) + 5p(p-6)}{(p-6)(p+4)}$$

$$\frac{2 + 5p^2 - 30p}{(p-6)(p+4)}$$

$$\frac{5p^2 - 30p + 2}{(p-6)(p+4)}$$

Dimension 12

$$\text{a) } \frac{m-5}{m^2 - 11m + 28} - \frac{m+5}{m^2 - 2m - 35}$$

$$\frac{m-5}{(m-4)(m-7)} - \frac{m+5}{(m-7)(m+5)}$$

$$\frac{m-5}{(m-4)(m-7)} - \frac{1}{(m-7)}$$

$$\frac{(m-5)(1) - 1(m-4)}{(m-4)(m-7)}$$

$$\frac{m-5-m+4}{(m-4)(m-7)}$$

$$\frac{-1}{(m-4)(m-7)}$$

Dimension 12

$$\text{b) } \frac{a^2 + 2a + 3}{a^2 - 9} - \frac{a}{a - 3}$$

$$\frac{(a+3)(a-1)}{(a+3)(a-3)} - \frac{a}{a-3}$$

$$\frac{a-1}{a-3} - \frac{a}{a-3}$$

$$\frac{a-1-a}{a-3}$$

$$\frac{-1}{a-3}$$

Dimension 13

$$\text{a) } \frac{x+3}{2x^2+x-15} - \frac{2x-5}{2x^2-3x-5} = \frac{6-x}{(2x-5)(x+1)}$$

$$\frac{x+3}{(x+3)(2x-5)} - \frac{2x-5}{(x+1)(2x-5)} = \frac{6-x}{(2x-5)(x+1)}$$

$$\frac{1}{2x-5} - \frac{1}{x+1} = \frac{6-x}{(2x-5)(x+1)}$$

$$\frac{(x+1)-(2x-5)}{(2x-5)(x+1)} = \frac{6-x}{(2x-5)(x+1)}$$

$$\frac{x+1-2x+5}{(2x-5)(x+1)} = \frac{6-x}{(2x-5)(x+1)}$$

$$\frac{6-x}{(2x-5)(x+1)} = \frac{6-x}{(2x-5)(x+1)}$$

Dimension 13

$$b) \quad \frac{2x-1}{x^2-2x-3} + \frac{x^2-x}{x^2-1} = \frac{x^2-x-1}{(x+1)(x-3)}$$

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

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

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

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

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

Dimension 14

$$a) \quad \frac{2x^2-5x-3}{x^3-9x} - \frac{6x^2+7x-3}{3x^2+8x-3} = \frac{8x^2+18x+7}{4x^3+19x^2+21x} - \frac{2x^2+13x+15}{x^2+8x+15}$$

$$\frac{(x-3)(2x+1)}{x(x+3)(x-3)} - \frac{(2x+3)(3x-1)}{(x+3)(3x-1)} = \frac{(4x+7)(2x+1)}{x(4x+7)(x+3)} - \frac{(x+5)(2x+3)}{(x+3)(x+5)}$$

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

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

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

Dimension 14

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

$$\text{b) } \frac{6x^2 - 5x + 1}{3x^2 + 8x - 3} + \frac{x^3 - x}{x^2 + 2x - 3} = \frac{6x^2 + x - 2}{3x^2 + 11x + 6} + \frac{x^3 - 4x^2 - 5x}{x^2 - 2x - 15}$$

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

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

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

$$\frac{x^2+3x-1}{x+3} = \frac{x^2+3x-1}{x+3}$$