Exercices supplémentaires

Questionnaire

MAT- 4106

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EXERCICES SUPPLÉMENTAIRES

Dimension 1

1. $7x^2 - 14$
2. $4a^2b^5 + 8a^2b^4 - 12a^3$
3. $2cx + bxc + cxy$
4. $21bdxy + 49ady$
5. $a^8b^3 + a^7b^4 + a^6b^5$
6. $16m^2 - 4m^2n - 8mn^2$
7. $x^7 + x^6 + x^5 + x^4$
8. $10x^2 - 8x$
9. $27x^2 - 45x + 54$
10. $r^3 + 2r^2s^2 + r^2$
11. $2(x + y) + a(x + y)$
12. $9m^4n^5o^2p^4 - 27o^3p^6q + 18m^6o^2pq^5 - 36\ mo^2p^5q^2 + 90o^3p^4q^6r^3 =$

Dimension 2

1. $am - an - bm + bn$
2. $10x^2 + 5x + 6x + 3$
3. $3xy + 3xz + 2y^2 + 2yz$
4. $7xy + 14xz + y + 2z$
5. $4x^3 + 4x^2 - 4x - 4$
6. $5ac + 5bc - 10c + 8ad + 8bd - 16d$
7. $2ax + 2ay - 2az + bx + by - bz$
8. $0,5x^2y + 1,5xy^2 - 3x^3y^2 - 9x^2y^3$
   $(0,5xy - 3x^2y^2)(x + 3y)$
9. $2ax^3 - 2ax^2 + 8a - 3bx^3 - 3bx^2 - 12b$
10. $6ax^2y^3 + 5z^5 - 10az^4 - 3x^2y^3z - 7xz^4 + 14axz^3$
11. $3x^3y^5 - 6x^4y^3 + 18x^5y^3 - 9x^4y^5$
12. $3ac + 3bc + ad + bd$

EXERCICES SUPPLÉMENTAIRES (<u>MAT-4106-1</u>)

Dimension 3

1. $x^2 - 6x + 9$
2. $x^2 + 9xy + 14y^2$
3. $a^2 - 13a + 30$
4. $y^2 + 2y - 24$
5. $m^4 - 2m^2n - 3n^2$
6. $x^2 + 12x + 35$
7. $a^2 + 16 - 17a$
8. $x^4 - 2x^2y^2 - 48y^4$
9. $-a^2 - a + 20$
10. $m^2 - 3mn^2 - 18n^4$
11. $x^4 - 16x^2y^2 + 55y^4$
12. $x^2 + 7x - 18$

Dimension 4

1. $12x^2 + 11xy + 2y^2$
2. $6a^2 - ab - b^2$
3. $27a^2 - 33ab + 10b^2$
4. $-2a^2 + 5ab - 3b^2$
5. $42a^2 + 10b^2 - 47ab$
6. $10s^2 + 17st + 3t^2$
7. $72x^2 - y^2 + xy$
8. $22m^2 + 7mn - 2n^2$
9. $51x^2 + 31xy - 2y^2$
10. $8x^2 - 34xy + 21y^2$
11. $3a^2 - 25ab + 52b^2$
12. $4c^2 + 28cd + 49d^2$

EXERCICES SUPPLÉMENTAIRES (MAT-4106-1)

Dimension 5

1. $y^2 - 49$
2. $64c^6 - 49d^4e^4$
3. $4a^2b^4c^6 - 9d^4$
4. $25x^4 - 100y^2$
5. $16 - m^4n^8$
6. $25y^6 - 100x^8y^8$
7. $49m^2/100 - 25$
8. $25x^4/36 - 9y^4z^8/16$
9. $9q^4/16 - 25/36$
10. $400 - 169p^8/900$
11. $4y^8/25 - 0,64$
12. $-9q^4/16 + 25r^2/36$

Dimension 6

1. $c^5 + c^4d - cd^2 - d^3$
2. $4a^3 - 16a^2b - 9ab^2 + 36b^3$
3. $m^4/81 - n^4/16$
4. $8a^3 - 4a^2 - 2a + 1$
5. $16a^4b - 10a^6c^4 - 8a^3b^2 + 5a^5bc^4$
6. $6a^2b + 30 ab - 12ab^2 - 60b^2$
7. $2a^2 - 8b^2$
8. $5abx - 5axy + 5bx^2 - 5x^2y$
9. $100x^4 - 36a^4b^2$
10. $9a^6 - 36a^4b^2$
11. $s^3 - s$
12. $x^4 - a^4$

EXERCICES SUPPLÉMENTAIRES   (MAT-4106-1)

Dimension 7

1. $30s^3 - 25s^2t^2 - 30st^4$

2. $45pq + 6p^2q^2 - 3p^3q^3$

3. $5st^2 + 32s^2t^2 - 21s^3t^2$

4. $3a^2b - 9ab - 30b$

5. $- 33m^3 + 69m^2 - 6m$

6. $- 4m^5 - 4m^3 + 24m$

7. $15x^2y^2 + 95xy^2 - 70y^2$

8. $a^2x + 2abx + b^2x$

9. $a^2t^2 - 16 a^2t + 39a^2$

10. $6c^2 + 6cd - 12d^2$

11. $11x^2 - 42x + x^3$

12. $8x^3 + 32x^2 + 30x$

Dimension 8

1. $\dfrac{x^2 + 4x - 21}{x^2 + 13x - 48}$

2. $\dfrac{a^2 - 1}{2a^2 - a - 3}$

3. $\dfrac{24dx^2 - 18dx}{- 2dx}$

4. $\dfrac{cd - d - c + 1}{3cd - 3c}$

5. $\dfrac{- 4a + 8b}{2b^2 + 3ab - 2a^2}$

6. $\dfrac{10m^3 + 15m^2 - 10m}{2m^2 - 5m + 2}$

7. $\dfrac{9 + 12xy - 5x^2y^2}{3x^2y^2 - 10xy + 3}$

8. $\dfrac{b^4 - a^4}{a^4 - 2a^2b^2 + b^4}$

9. $\dfrac{2x^4 - 5x^2y^2 + 3y^4}{2x^4 - x^2y^2 - 3y^4}$

10. $\dfrac{12a^2 - 5ab - 2b^2}{9a^2 - 12ab + 4b^2}$

<u>EXERCICES SUPPLÉMENTAIRES</u>   (<u>MAT-4106-1</u>)

<u>Dimension 9</u>

1. $\dfrac{3x + 5}{4(x - 1)}$ X $\dfrac{x - 1}{3x + 5}$

2. $\dfrac{a^2 - 1}{a^3 - a^2}$ X $\dfrac{8a^4}{a + 1}$

3. $\dfrac{4a + a^2}{a^3}$ X $\dfrac{12 - 3a}{16 - a^2}$

4. $\dfrac{d^2 - 2d}{8 - 2d - d^2}$ X $\dfrac{3d + 12}{6d}$

5. $\dfrac{a^2 - a - 6}{16a^2}$ X $\dfrac{8a^3 - 24\,a^2}{a + 2}$

6. $\dfrac{30ax^2 + 10axy - 15bx^2 - 5bxy}{- 3x - y}$ X $\dfrac{a^2 + b^2}{40a^2x - 10b^2x}$

7. $\dfrac{16a - a^3}{12 + 7a + a^2}$ X $\dfrac{3a^3 + a^4}{a^4 - 4a^3}$

8. $\dfrac{4xy^2 - 12y}{2x^2 + 7x + 3}$ X $\dfrac{2x + 1}{xy^2 - 3y}$

9. $\dfrac{x^2 + 3xy - 18y^2}{- 2x^2 - 10x + 12}$ X $\dfrac{4x^2 + 4x - 8}{x^2 - 2xy - 3y^2}$

10. $\dfrac{8}{x + 1}$ X $\dfrac{x^2 - 3x - 4}{8x + 4y}$

<u>Dimension 10</u>

1. $\dfrac{a^2 - 16}{a^3}$ $\div$ $\dfrac{a^2 - 5a + 4}{3a^3 - 3a^2}$

2. $\dfrac{m^2 - 49}{(m + 7)^2}$ $\div$ $\dfrac{3m - 21}{2m + 14}$

3. $\dfrac{2p^2 - 5p + 2}{2p^2}$ $\div$ $(5p - 2 - 2p^2)$

4. $\dfrac{d^2 - 3df - 10f^2}{d^2 - 25f^2}$ $\div$ $\dfrac{10d + 20f}{2d + 10f}$

5. $\dfrac{x^4 - 1}{x^2 + 1 - 2x}$ $\div$ $\dfrac{2x^2 + 2x}{x^2 - x}$

6. $\dfrac{y^2 - x^2}{x^2 + 2xy + y^2}$ $\div$ $\dfrac{x^2 - 2xy + y^2}{x^2 + xy}$

7. $\dfrac{a^2 + 7a - 30}{a^4 + 3a^3}$ $\div$ $\dfrac{a^4 - 3a^3}{- a^6}$

8. $\dfrac{4x - 2y}{(2x - y)^2}$ $\div$ $\dfrac{12x + 6y}{4x^2 - y^2}$

9. $\dfrac{2x^2 + 3x - 5}{2x^2 - 7x - 30}$ $\div$ $\dfrac{1 - x^2}{- 4x + 24}$

10. $\dfrac{4c^2 - d^2}{6c^2 + 5cd + d^2}$ $\div$ $\dfrac{d^2 - 4c^2}{9c^2 - d^2}$

<u>EXERCICES SUPPLÉMENTAIRES</u>   (<u>MAT-4106-1</u>)

<u>Dimension 11</u>

1. $\dfrac{2x}{a-b} + \dfrac{3y}{a-b}$

2. $\dfrac{m-n}{2n} + \dfrac{m+n}{3m}$

3. $\dfrac{3t}{2s+t} + \dfrac{2s-t}{s}$

4. $\dfrac{c+d}{3c+3d} + \dfrac{2c}{d-2c}$

5. $\dfrac{-3c+6d}{2c(c-2d)} + \dfrac{6d}{2cd+4d^2}$

6. $\dfrac{a^2-2ab+b^2}{a^2-b^2} + \dfrac{2ab}{2a^2+3ab+b^2}$

7. $\dfrac{4x^2-4xy+y^2}{2x^2+xy-y^2} + \dfrac{3x^2-3xy}{2y(x+y)}$

8. $\dfrac{-(x-5)}{3x^2+5x-2} + \dfrac{x+6}{9x^2-1}$

9. $\dfrac{x^2+2x+20}{x^2+4x-12} + \dfrac{x+7}{x+6}$

10. $\dfrac{x+5}{x^2+11x+30} + \dfrac{x+16}{x^2+2x-24}$

<u>Dimension 12</u>

1. $\dfrac{m-2n}{m} - \dfrac{2n}{m}$

2. $\dfrac{6}{x-y} - \dfrac{4}{x+y}$

3. $\dfrac{5m}{2m+3} - \dfrac{3m}{3m-2}$

4. $\dfrac{12mn-6n^2}{2m^3-m^2n} - \dfrac{m-n}{m^2+mn}$

5. $\dfrac{2x}{x-y} - \dfrac{x^2-y^2}{x^2-2xy+y^2}$

6. $\dfrac{x^2+2xy}{x^2-3xy} - \dfrac{3y}{x-y}$

7. $\dfrac{x-3}{5x+30} - \dfrac{x+3}{5x+10}$

8. $\dfrac{x+1}{x-4} - \dfrac{x-5}{x+5}$

9. $\dfrac{x}{x^2-49} - \dfrac{1}{x+7}$

10. $\dfrac{x-1}{x^2+12x+32} - \dfrac{2x-2}{x^2+8x}$

Dimension 13

1. $\dfrac{x + y}{x^2 - y^2} + \dfrac{4x + 4y}{x^2 - 2xy + y^2} = \dfrac{5x + 3y}{(x - y)^2}$

2. $\dfrac{x^2 + 4}{x^3 - 4x} - \dfrac{x + 2}{2x^2 - 4x} = \dfrac{x^3 - x^2 - 4}{2x(x + 2)(x - 2)}$

3. $\dfrac{x^2 + 2xy + y^2}{x^2 - y^2} + \dfrac{x^2 - y^2}{x^2 + 2xy + y^2} = \dfrac{2(x^2 + y^2)}{x^2 - y^2}$

4. $\dfrac{x - y}{2x^2 + 2xy} + \dfrac{y}{x^2 - y^2} = \dfrac{x^2 + y^2}{2x(x^2 - y^2)}$

5. $\dfrac{2a^2 - 2ab + b^2}{a^2 - ab} + \dfrac{a + b}{a} = \dfrac{3a - 2b}{a - b}$

6. $\dfrac{ax - a}{ax^2 - a} - \dfrac{x^2 - 1}{x^2 - 2x + 1} = \dfrac{-(x^2 + x + 2)}{(x + 1)(x - 1)}$

7. $\dfrac{27b^2 - 48c^2}{6ab - 8ac} - \dfrac{3c(48b + 32c)}{12ab + 16ac} = \dfrac{27b^2}{6ab + 8ac}$

8. $\dfrac{5a - b}{10a^2 + 13ab - 3b^2} + \dfrac{-3a + 3b}{4a^2 + 12ab + 9b^2} = -\dfrac{(a - 6b)}{(2a + 3b)^2}$

Dimension 14

1. $\dfrac{x}{x-4} + \dfrac{2}{x-9} = \dfrac{x^2 + 2x}{x^2 - 2x - 8} + \dfrac{2x + 6}{x^2 - 6x - 27}$

2. $\dfrac{a^2 + b^2}{a^2b + ab^2} + \dfrac{a - b}{ab} = \dfrac{a^2 - b^2}{a^2b + 2ab^2 + b^3} + \dfrac{1}{b}$

3. $\dfrac{x^2 + 5x - 6}{x^2 + 2x - 24} - \dfrac{2x + 12}{x^2 + 7x + 6} = \dfrac{x^2 + x - 2}{x^2 - 2x - 8} - \dfrac{6x + 18}{3x^2 + 12x + 9}$

4. $\dfrac{x + 4}{x^2 + 2x} - \dfrac{2x + 3}{x^3 + 2x^2} = \dfrac{x^2 + 3x - 4}{x^3 + x^2 - 2x} - \dfrac{2x^2 + x - 3}{x^4 + x^3 - 2x^2}$

5. $\dfrac{x^2 + 3x + 2}{x^2 - 2x - 3} - \dfrac{x + 3}{x + 1} = \dfrac{2x^2 + 13x + 35}{3x^2 - 6x - 9} - \dfrac{2x + 2}{3x - 9}$

6. $\dfrac{3x^2 + 2x - 5}{3x^2 + 11x + 10} - \dfrac{x + 1}{x - 2} = \dfrac{2x + 6}{x^2 + 5x + 6} - \dfrac{8x - 4}{x^2 - 4}$