



Commission scolaire
de la Côte-du-Sud

Mathématiques

MAT - 4106-1

CORRIGÉ

Factorisation et
Fractions algébriques

Prétest E

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LE SECONDAIRE PUBLIC
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Solutionnaire

MAT-4106-1

Question 1. $24x^3y^4 - 18x^3y^5 + 12x^3y^6 - 30x^2y^7z$

Réponse $6x^2y^4 (4x - 3xy + 2xy^2 - 5y^3z)$

Question 2. $6ab^2c^3 - 4c^5d - 6b^2c^2d^3 + 9ab^4d^2$

Réponse $6ab^2c^3 + 9ab^4d^2 - 4c^5d - 6b^2c^2d^3$
 $3ab^2 (2c^3 + 3b^2d^2) - 2c^2d (2c^3 + 3b^2d^2)$
 $(3ab^2 - 2c^2d) (2c^3 + 3b^2d^2)$

Question 3. $X^2 - 19x + 84$

Réponse $X^2 - 12x - 7x + 84$
 $X (X - 12) - 7 (X - 12)$
 $(X - 7) (X - 12)$

Question 4. $18x^2 - 39x + 20$

Réponse $18x^2 - 15x - 24x + 20$
 $3x (6x - 5) - 4 (x - 5)$
 $(3x - 4) (6x - 5)$

Question 5. $\frac{4x^4}{25} - \frac{16y^2z^2}{9}$

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

Question 6. $\underline{2x^6y^4 - 50y^4z^6}$

Réponse $2y^4(x^6 - 25z^6)$
 $2y^4(x^3 - 5z^3)(x^3 + 5z^3)$

Question 7. $\underline{6x^3 + 21x^2 - 45x}$

Réponse $3x(2x^2 + 7x - 15)$
 $3x(2x^2 + 10x - 3x - 15)$
 $\downarrow 2x(x + 5) - 3(x + 5)$
 $3x(2x - 3)(x + 5)$

Question 8. $\frac{16x^2 - 1}{12x^2 - 17x - 5}$

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

Question 9. $\frac{4x^2 - 1}{4x^2 - 9} \div \frac{2x^2 + 11x + 5}{2x^2 + 13x + 15}$

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

Question 10.
$$\frac{25x^2 - y^2}{9x^2z^2 - 4z^2} \cdot \frac{z(3x+2)}{5x+y}$$

Réponse
$$\frac{(5x-y)(5x+y)}{z^2(9x^2-4)} \cdot \frac{z(3x+2)}{5x+y}$$

$$\frac{(5x-y)(5x+y)}{z^2(3x-2)(3x+2)} \cdot \frac{z(3x+2)}{(5x+y)}$$

$$\frac{(5x-y)}{z(3x-2)}$$

Question 11.
$$\frac{x^2 + 3x + 2}{2x^2 - x - 3} + \frac{3x^2 - 15x}{6x^2 - 9x}$$

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

$$\frac{x+2}{2x-3} + \frac{x-5}{2x-3}$$

$$\frac{x+2+x-5}{2x-3}$$

$$\frac{2x-3}{2x-3}$$

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Question 12.

$$\frac{y+1}{y^2-1} - \frac{y}{y^2+y}$$

Réponse

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

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

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

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

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

Question 13.

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

Réponse

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

$$\frac{1(x+1) + [(x-1)(x+1)]}{(x-1)(x-1)} =$$

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

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

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

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

Question 14.
$$\frac{x + 6}{x - 1} - \frac{10x + 36}{x^2 + 5x - 6} = \frac{x^2 + 2x}{x^2 + 5x - 6}$$

Réponse
$$\frac{x + 6}{x + 1} - \frac{2(5x + 18)}{(x+6)(x-1)} = \frac{x(x + 2)}{(x+6)(x-1)}$$

$$\frac{[(x+6)(x+6)] - 2(5x+18)}{(x+6)(x-1)} =$$

$$\frac{[x^2+6x+6x+36] - 10x - 36}{(x+6)(x-1)} =$$

$$\frac{x^2+6x+6x-10x + 36 - 36}{(x+6)(x-1)} =$$

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

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

Question 15.
$$\frac{x + 1}{x - 1} - \frac{x - 1}{x + 1} = \frac{4x}{x^3 - x} + \frac{4}{x + 1}$$

Réponse
$$\frac{[(x+1)(x+1)] - [(x-1)(x-1)]}{(x-1)(x+1)} = \frac{4x}{x(x^2-1)} + \frac{4}{x+1}$$

$$\frac{[x^2+2x+1] - [x^2-2x+1]}{(x-1)(x+1)} = \frac{4}{x^2-1} + \frac{4}{x+1}$$

$$\frac{x^2 + 2x + 1 - x^2 + 2x - 1}{(x-1)(x+1)} = \frac{4}{(x-1)(x+1)} + \frac{4}{(x+1)}$$

$$\frac{x^2 - x^2 + 2x + 2x + 1 - 1}{(x-1)(x+1)} = \frac{4 + 4(x-1)}{(x-1)(x+1)}$$

$$\frac{4x}{(x-1)(x+1)} = \frac{4 + 4x - 4}{(x-1)(x+1)}$$

$$\frac{4x}{(x-1)(x+1)} = \frac{4x}{(x-1)(x+1)}$$

