IUTB GMP Semestre 2

T.D. de Mathématiques Module F112

Fractions rationnelles

1. Décomposer en éléments simples sur $\mathbb{C}$:

$$F_1(x) = \frac{x^2}{(x-1)(x+2)(x+3)} \qquad F_2(x) = \frac{x^6 - x^5 + x^2 - x}{(x^2-x)(x^2-1)^2}$$

$$F_3(x) = \frac{x^3}{x^6+1} \qquad F_4(x) = \frac{x^2}{x^8-1}$$

2. Décomposer en éléments simples sur $\mathbb{R}$:

$$F_1(x) = \frac{x^4+x+1}{x^3-3x^2+2x} \qquad F_2(x) = \frac{x^2+1}{(x-1)(x^3+1)}$$

$$F_3(x) = \frac{x^2+2x-1}{(x-1)^2(x+1)(x^2+x+1)} \qquad F_4(x) = \frac{1}{(x^2-1)(x^2+1)^2}$$

$$F_5(x) = \frac{x^3+3x+2}{x^4(x^2+1)} \qquad F_6(x) = \frac{x-1}{(x^2-1)x(x+1)^2}$$

$$F_7(x) = \frac{1}{(x^2+1)^2-x^2} \qquad F_8(x) = \frac{x^2}{x^4+1}$$

$$F_9(x) = \frac{x+2}{x^4(1-x^4)} \qquad F_{10}(x) = \frac{1}{x^2(x^2-2x+2)^2}$$

$$F_{11}(x) = \frac{x^5}{x^4+1} \qquad F_{12}(x) = \frac{x^3}{x^6+1}$$