

Cours : 1.8 - 1.9 - 3.3. - 3.4 - 4.4. - 5.8

Exercices : 8 - 10 - 16 - 18

## Chapitre 27 : Matrices

**Def 1.1 : Matrice des composantes**

$$x = \sum_{i=1}^p x_i e_i$$

$$\text{Mat}_{B_E}(x) = (x_{i,1})_{1 \leq i \leq p}$$

**Def 1.4 : Matrice d'une application linéaire**

$$u(e_j) = \sum_{i=1}^n a_{i,j} f_i$$

**Prop 1.8**

$$\text{Mat}_{B_F}(y) = \text{Mat}_{B_E, B_F}(u) \times \text{Mat}_{B_E}(x)$$

$$\Rightarrow Y = AX$$

**Prop 1.9**

$$\text{Mat}_{B_E, B_G}(v \circ u) = \text{Mat}_{B_F, B_G}(v) \times \text{Mat}_{B_E, B_F}(u)$$

**Prop 3.3**

$$\text{Mat}_B(x) = P_{B, B'} \times \text{Mat}_{B'}(x)$$

$$\Rightarrow X = P_{B, B'} X'$$

**Prop 3.4**

$$\text{Mat}_{B'_E, B'_F}(u) = P_{B_F, B'_F} \times \text{Mat}_{B_E, B_F}(u) \times P_{B_E, B'_E}$$

$$\Rightarrow A' = Q^{-1}AP$$

$$\text{Mat}_{B'_E, B'_E}(u) = P_{B_E, B'_E} \times \text{Mat}_{B_E, B_E}(u) \times P_{B_E, B'_E}$$

$$\Rightarrow A' = P^{-1}AP$$