

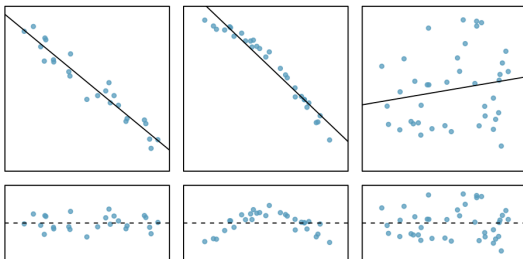
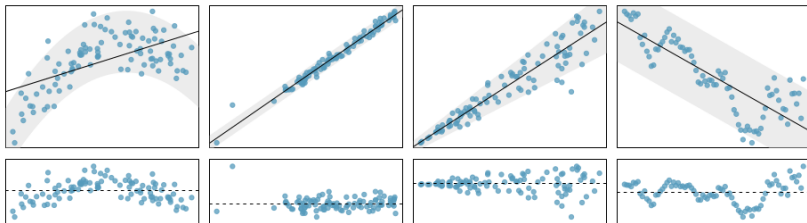
# Big Data Analytics

Régression Polynomiale

---

# Regression Polynomiale

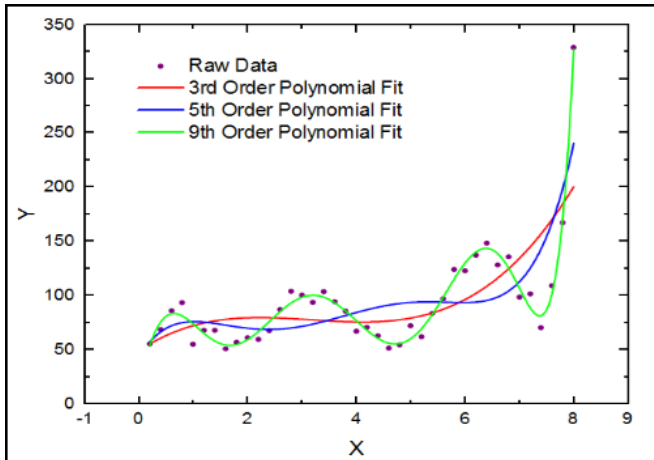
## Limites de la regression linéaire



# Régression Polynomiale

$$Y = a_0 + a_1 * X + a_2 * X^2 + a_3 * X^3 + \dots + a_n * X^n$$

$$Y = \sum_{k \in [0..n]} a_k * X^k$$



$$Y = \sum_{k \in [0..n]} a_k * X^k$$

$$E_{\Omega} = \frac{1}{2n} \sum_{i=[1..n]} (\hat{Y}_i - Y_i)^2$$

$$\frac{\partial E_{\Omega}}{\partial a_k} = \frac{1}{n} \sum_{i=[1..n]} (Y_i - \hat{Y}_i) \cdot X^k$$

**M.A.J :**

$$a_k \leftarrow a_k - \gamma \cdot \frac{\partial E_{\Omega}}{\partial a_k}$$

où  $1 > \gamma > 0$  (learning rate)