Exercice1_SDZ

January 15, 2022

1. Calculer la solution exacte de

$$-u'' = x^2, \qquad u(0) = 0, \qquad u(1) = 0$$

$$u(x) = -\frac{x^4}{12} + c_1 x + c_2$$

On utilise les conditions aux bords

$$u(0) = c_2 = 0 \longrightarrow c_2 = 0$$

$$u(1) = -\frac{1}{12} + c_1 = 0 \longrightarrow c_1 = \frac{1}{12}$$

$$\boxed{u(x) = -\frac{x^4}{12} + \frac{1}{12}x}$$