

Exercice1_SDZ

January 16, 2022

1 Série 4 - Exercice 1 (SDZ)

1. Trouver les solutions générales des EDO

(a)

$$X'' = -\beta^2 X$$

(b)

$$X'' = \beta^2 X$$

(c)

$$X'' = 0$$

1.1 (a)

$$X(x) = A \cos(\beta x) + B \sin(\beta x) \longrightarrow X''(x) = -A\beta^2 \cos(x) - B\beta^2 \sin(\beta x)$$

$$\boxed{X(x) = A \cos(\beta x) + B \sin(\beta x)}$$

1.2 (b)

$$X'' = \beta^2 X$$

$$X = A \cosh(\beta x) B \sinh(\beta x)$$

$$X = A\beta^2 \cosh(\beta x) B\beta^2 \sinh(\beta x)$$

$$\boxed{X(x) = A \cosh(\beta x) + B \sinh(\beta x)}$$

1.3 (c)

$$X'' = 0$$

$$\boxed{X(x) = Ax + B}$$