

Exercise 01

Solve the following differential equations on \mathbb{R} :

1) $y' + 2y = x^2$

2) $y' + y = 2\sin x$

3) $y' - y = (x + 1)e^x$

4) $y' + y = x - e^x + \cos x$

Exercise 02

1) Solve the following differential equations on \mathbb{R} : $(x^2 + 1)y' + 2xy = 3x^2 + 1$

Find the solution checking $y(0) = 3$

2) Solve the following differential equations on \mathbb{R} : $y'\sin x - y\cos x + 1 = 0$ sur $]0; \pi[$

Find the solution checking $y\left(\frac{\pi}{4}\right) = 1$

Exercise 03

1) Solve the following differential equations on \mathbb{R} :

2) $y'' - 3y' + 2y = 0$

3) $y'' + 2y' + 2y = 0$

4) $y'' - 2y' + y = 0$

5) $y'' + y = 2\cos^2 x$