

## TWK2A

### Undetermined coefficients (Section 4.4)

### Problems

Solve the DEs in these exercises using the method of *undetermined coefficients*.

1.  $y'' - 8y' + 20y = 100x^2 - 26xe^x$
2.  $y'' + 3y = -48x^2e^{3x}$
3.  $4y'' - 4y' - 3y = \cos 2x$
4.  $y'' + y = 2x \sin x$
5. Solve  $y'' - y = \cosh x$  with  $y(0) = 2, y'(0) = 12$ .
6.  $y'' + y' - 6y = 2x$
7.  $y'' + 4y = (x^2 - 3) \sin 2x$
8.  $y^{(4)} - y'' = 4x + 2xe^{-x}$
9.  $4y'' + 9y = 15$
10.  $y'' + 2y' = 2x + 5 - e^{-2x}$
11.  $y'' + 2y' - 24y = 16 - (x + 2)e^{4x}$
12. Solve  $2y'' + 3y' - 2y = 14x^2 - 4x - 11$  with  $y(0) = 0, y'(0) = 0$ .
13.  $y''' - y' = x^3$
14.  $y''' - 6y'' = 3 - \cos x$
15.  $y^{(4)} + 3y''' + 3y'' - 7y' = (x - 1)^2$