



Lös följande DE.

1. $y'' + 2y' + y = x^2 + 3, y(0) = 0, y'(0) = 3.$
2. $y'' - 5y' + 6y = \sin(x), y(0) = 1, y'(0) = -1.$
3. $y'' - 2y' + 5y = x + 7, y(-1) = 2, y'(-1) = -1.$
4. $y'' + 9y = \sin(3), y(0) = 3, y'(0) = 0.$
5. $y'' + 6y' + 9y = \cos(x) + \sin(2x), y(0) = 1, y'(0) = 0.$

Facit.

1. $y_h = (-3x - 9) e^{-x}, y_p = x^2 - 4x + 9$
2. $y_h = -\frac{29e^{3x}}{10} + \frac{19e^{2x}}{5}, y_p = \frac{\sin x + \cos x}{10}$
3. $y_h = e^x (C_1 \sin(2x) + C_2 \cos(2x)), y_p = \frac{5x+37}{25}$
 $y = \frac{(14e \sin 2 - 23e \cos 2) e^x \sin(2x) + (-23e \sin 2 - 14e \cos 2) e^x \cos(2x) + 10x + 74}{50}$
4. $y_h = -\frac{2 \sin(3x)}{15} + 3 \cos(3x), y_p = \frac{\sin(2x)}{5}$
5. $y_h = \left(\frac{371x}{130} + \frac{4187}{4225} \right) e^{-3x}, y_p = \frac{250 \sin(2x) - 600 \cos(2x) + 507 \sin x + 676 \cos x}{8450}$