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1. Find some function y which solves

a) $y'' + 3y = -9$

b) $2y'' + y = 9e^{2x}$

c) $y'' - y' + 9y = 3 \sin(3x)$

2. Determine the general solutions for equations

a) $y'' - y = 11x + 1$

b) $x'' - 4x' + 4x = te^{2t}$

3. Solve the initial value problems

a) $z'' + z = 2e^{-x}$, when $z(0) = 0$ ja $z'(0) = 0$.

b) $y'' + 9y = 27$, when $y(0) = 4$ ja $y'(0) = 6$.

4. The location of the point mass at time t is

$$\mathbf{r}(t) = 3 \cos t \mathbf{i} + 4 \cos t \mathbf{j} + 5 \sin t \mathbf{k}$$

Determine its velocity, speed and acceleration at time t .