

Worksheet 22

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Solve the differential equation or initial-value problem using the method of undetermined coefficients.

1. $y'' + y = e^x + x^3$.
2. $y'' - 4y = e^x \cos(x)$, $y(0) = 1$, $y'(0) = 2$.

Solve the differential equation using the method of variation of parameters.

3. $y'' + y = \sec^3(x)$, $0 < x < \pi/2$.
4. $y'' + 3y' + 2y = \sin(e^x)$.

Solve the differential equation using (a) undetermined coefficients and (b) variation of parameters.

5. $y'' - 2y' - 3y = x + 2$.
6. $y'' - y' = e^x$.