**Engineering Mathematics – Midterm 1**

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| 1. | Solve the ODE by any method. | 10 |
| 2. | Solve the ODE by method of integration factor. | 10 |
| 3. | Solve the ODE by method of variation of parameters. | 10 |
| 4. | Solve the ODE by any method that you prefer. | 10 |
| 5. | Solve the ODE by method of exact equations. | 10 |
| 6. | Suppose that a 9-th order homogeneous linear differential equation with constant coefficients has characteristic roots:  2, 2, 3, 4+2i, 4-2i, 4+2i, 4-2i, 7-3i, 7+3i  What are the general solutions of the differential equation? | 10 |