

The majority of the credit you receive will be based on the completeness and the clarity of your responses. Please use equal signs where appropriate and write solutions with a logical flow. Show your work, and avoid saying things that are untrue, ambiguous, or nonsensical.

1. Solve the following using the method of variation of parameters.

(a) $y''' - 3y' + 2y = te^t$

(b) $y''' + 16y' = t \sin(t)$

2. Solve the following using the method of undetermined coefficients.

(a) $y^{(4)} - 5y'' + 4y = 10 \cos(t) - 20 \sin(t)$

(b) $y^{(4)} - 3y''' + 3y'' - y' = 6t - 20$