

Reduction of Order

1) Use reduction of order to find a second solution.

$$t^2 y'' - 4t y' + 6y = 0, \quad y_1 = t^2$$

$$3t^2 y'' - 3ty' - 24y = 0 = 0, \quad y_1 = t^4$$

2) For bonus points! Use reduction of order for

$$(2 - t) y''' + (2t - 3)y'' - t y' + y = 0, \quad y_1 = e^t$$

In this example, if you do your algebra right, you will find an equation for v which you can solve. Once you have done this, you can solve the above equation completely.