

Guess a possible non-homog soln for the following DEs:

Note homogeneous solution to  $y'' - 4y' - 5y = 0$  is  $y = c_1e^{-t} + c_2e^{5t}$

$$\text{since } r^2 - 4r - 5 = (r - 5)(r + 1) = 0$$

1.)  $y'' - 4y' - 5y = 4e^{2t}$

Guess: \_\_\_\_\_

2a.)  $y'' - 4y' - 5y = t^2 - 2t + 1$

Guess: \_\_\_\_\_

2a.)  $y'' - 4y' - 5y = t^2$

Guess: \_\_\_\_\_

2c.)  $y'' - 4y' - 5y =$  a degree 2 polynomial

Guess: \_\_\_\_\_

3a.)  $y'' - 4y' - 5y = 30$

Guess: \_\_\_\_\_

4a.)  $y'' - 4y' - 5y = 4\sin(3t)$

Guess: \_\_\_\_\_

4b.)  $y'' - 4y' - 5y = 4\sin(3t) + 5\cos(3t)$

Guess: \_\_\_\_\_

4c.)  $y'' - 4y' - 5y = 5\cos(3t)$

Guess: \_\_\_\_\_

5.)  $y'' - 4y' - 5y = 4e^{-t}$

Guess: \_\_\_\_\_

$$6.) y'' - 4y' - 5y = e^t + e^{-t} + 2t^3 + 3t^2 + 4\sin(3t) + 5\cos(3t)$$

Guess: \_\_\_\_\_

$$7.) y'' - 4y' - 5y = e^t + e^{-t} + 2t^3 + 3t^2 + 4\sin(3t) + 5\cos(t)$$

Guess: \_\_\_\_\_

$$8.) y'' - 4y' - 5y = 4(t^2 - 2t - 1)e^{2t}$$

Guess: \_\_\_\_\_

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Note homogeneous solution to  $y'' - 6y' + 9y = 0$  is  $y = c_1e^{3t} + c_2te^{3t}$

$$\text{since } r^2 - 6r + 9 = (r - 3)(r - 3) = 0$$

$$9.) y'' - 6y' + 9y = 7e^{3t}$$

Guess: \_\_\_\_\_

$$10.) y'' - 6y' + 9y = 7e^{-3t}$$

Guess: \_\_\_\_\_

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Some special cases:

$$11.) y'' - 5y = 4\sin(3t)$$

Best Guess: \_\_\_\_\_

$$12.) y'' - 4y' = t^2 - 2t + 1$$

Guess: \_\_\_\_\_