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

Note homogeneous solution to $y'' - 4y' - 5y = 0$ is
$y = c_1 e^{-t} + c_2 e^{5t}$ since $r^2 - 4r - 5 = (r-5)(r+1) = 0$

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

Guess: _____

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

Guess: _____

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

Guess: _____

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

Guess: _____

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

Guess: _____

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

Guess: *FYI : See answers*

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

Guess: *FYI : See answers*

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

Guess: _____

Note homogeneous solution to $y'' - 6y' + 9y = 0$ is
$y = c_1 e^{3t} + c_2 t e^{3t}$ since $r^2 - 6r + 9 = (r-3)(r-3) = 0$

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

Guess: _____

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

Guess: _____

Some special cases:

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

Best Guess: _____

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

Guess: _____