$y' + 3y = 4$, $y(0) = 1$ $\quad y = \frac{4}{3} + Ce^{-3t}$

$y' + 3y = 0$

$y' = -3y$

$y = Ce^{-3t}$

$y_p = C$

$y_p' = 0$

$3C = 4$

$C = \frac{4}{3}$

$y'' + 5y' + 7y = 4e^{-3t}$, $y(0) =$ $y'(0) =$

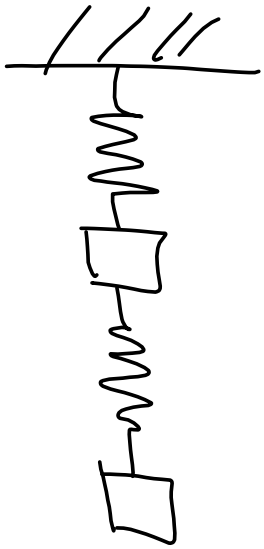
underdamped $b^2 - 4ac < 0$

$y = e^{-\theta}(C_1 \sin\theta + C_2 \cos\theta) + Ae^{-3t}$

$y'' + 10y' + 2y =$ $y = C_1 e^{-2t} + C_2 e^{-2t}$

overdamped

$b^2 - 4ac > 0$



$$e^x = 1 + x + \frac{1}{2}x^2 + \frac{1}{6}x^3 + \frac{1}{24}x^4 + \cdots$$

$$y = a_0 + a_1x + a_2x^2 + a_3x^3 + \cdots$$

$$y' + 3y = 7$$

$$y' = a_1 + 2a_2x + 3a_3x^2 + \cdots$$

$$\sin x = x - \frac{1}{6}x^3 + \frac{1}{120}x^5 -$$