WS Q2

$x^2y'' + 7xy' + 9y = 0$ let $y = x^n$

$x^2 n(n-1)x^{n-2} + 7xnx^{n-1} + 9x^n = 0$

$n(n-1) + 7n + 9 = 0$

$n^2 + 6n + 9 = 0$

$(n+3)^2 = 0$

$n = -3$ repeated root

Thus $y = c_1 x^n + c_1 (\ln x) x^n$

$= c_1 x^{-3} + c_1 (\ln x) x^{-3}$ is the general sol.