Name: (please print name as it appears in Canvas here →) .

MATH 334:	SAM 6: CONSTANT COEFFICIENT ODES [20PTS]

Box or underline your answer. Show work on this document. Thanks!

Problem 1 Solve the intial value problems given below:

(a.) $y'' + 4y' + 29y = 0$ where $y' = dy/dt$ and $y(0) = 1$ and $y'(0) = 0$

(b.) $(D^2 - 13D + 42)[x] = 0$ given $D = d/d\theta$ and $x(0) = 1$ and $x'(0) = 2$

Problem 2 In the problems which follow, $D = d/dx$. Find the general solution for:

(a.) $(2D^2 + 4D + 2)[y] = 0$

(b.) $(6D^2 - D - 1)[y] = 0$

(c.) $(D^4 - 16)[y] = 0$

(d.) $(D^3 - 3D^2 + 2D)[y] = 0$

(e.) $(D^4 + 4D^3 + 5D^2)[y] = 0$

(f.) $(D^3 - 8)[y] = 0$

(g.) $(D^4 + 6D^3 + 16D^2 + 18D + 39)[y] = 0$ (hint: $y = e^{-3x}\sin(2x)$ is a solution)