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(c) $y(-1) = 0 = (a-b+1)e^{-1} \rightarrow \boxed{a-b = -1}$
 $y' = -e^{-x}(ax^2+bx+1) + e^{-x}(2ax+b) = e^{-x}(-ax^2-bx-1+2ax+b)$
 $y'(-1) = 0 = -a+b-1-2a+b$
 $\boxed{a = 2b-3a} \rightarrow \boxed{a=1, b=2}$

(P)

(1) $x \in \mathbb{R}$

(2) $m = \lim_{x \rightarrow \infty} \frac{ax^2+bx+1}{xe^x} = 0$
 $n = \lim_{x \rightarrow -\infty} \frac{ax^2+bx+1}{e^x} = 0$ } $y=0$

$m = \lim_{x \rightarrow -\infty} \frac{ax^2+bx+1}{x} e^x = \infty$

(3) $f(0) = 1 \quad (0, 1)$

$0 = (x+1)e^{-x} \rightarrow x = -1$
 $(-1, 0)$

$\boxed{b=2}$
 (4) $f' = e^{-x}(-x) \rightarrow \boxed{x=0}$

-1	0	1
+	0	-
↗	max	↘

$\max(0, 1) \quad x > 0$; $\min(0, 1) \quad x < 0$

(5) $f'' = +e^{-x}x - e^{-x} = e^{-x}(x-1)$

$\min(1, \frac{2}{e})$

$\boxed{x=1}$

0	A	2
-	0	+

$x < 1$; $x > 1$

(6)

