⑤ $f(x) = xe^x \quad [-3, 3]$

ⓐ $f'(x) = e^x + xe^x$

$e^x(1+x) = 0$

$\ln e^x \neq \ln 0. \qquad 1+x=0$

$x = D.N.E. \qquad x = -1$

$\ominus \quad \oplus$

$+- \quad | \quad ++$

$-2 \quad -1 \quad 0$

$f'(x) = e^x(1+x)$

MIN

$f(-1) = -1e^{-1}$

$= \frac{-1}{e}$

MIN @ $(-1, \frac{-1}{e})$

ⓑ $f''(x) = e^x + e^x + xe^x$

$f''(x) = 2e^x + xe^x$

$e^x(2+x) = 0$

$\cancel{e^x = 0} \qquad 2+x=0$

$x = -2$

$\ominus \quad \oplus$

$+- \quad | \quad ++$

$-3 \quad -2 \quad -1$

P.o.I

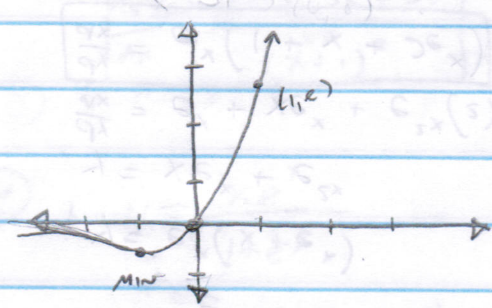
$f''(x) = e^x(2+x)$

$f(-2) = -2e^{-2}$

$= \frac{-2}{e^2}$

POINT of INFLECTION @ $(-2, \frac{-2}{e^2})$

GRAPH Y-INT ⇒ (0,0) (X-INT Also)



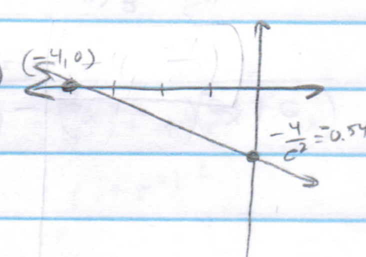
x	y
-2	$\frac{-2}{e^2}$ (-.2707)
MIN -1	$\frac{-1}{e}$ (-.3679)
0	0
1	e

ⓓ $0 = -\frac{1}{e^2}(x+4)$

$x = -4$

$\boxed{(-4, 0)}$

ⓔ



$\frac{-4}{e^2} =$

ⓒ $f'(-2) = e^{-2}(1-2)$

SLOPE $= -\frac{1}{e^2}$

$-\frac{2}{e^2} = -\frac{1}{e^2}(-2) + b$

$-\frac{2}{e^2} = \frac{2}{e^2} + b$

$b = \frac{-4}{e^2}$

$\boxed{\begin{array}{l} y = -\frac{1}{e^2}x - \frac{4}{e^2} \\ y = -\frac{1}{e^2}(x+4) \end{array}}$

$A = \frac{1}{2}(4)(\frac{4}{e^2})$

$\boxed{A = \frac{8}{e^2}}$