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

a. domain: $(-\infty, 0) \cup (0, \infty)$

b. $x \neq 0$. no y-intercept

Set $y=0$. $0 = \frac{e^x}{x^2}$ .. $e^x \neq 0$. no x-intercepts

c. none

d. $\lim_{x \to 0} \frac{e^x}{x^2} = \infty$. $\boxed{x=0}$

as $x \to 0$, $e^x \to 1$, $x^2 = 0^+$

$\lim_{x \to \infty} \frac{e^x}{x^2} = \infty$; $\lim_{x \to -\infty} \frac{e^x}{x^2} = 0$; $\boxed{y=0}$

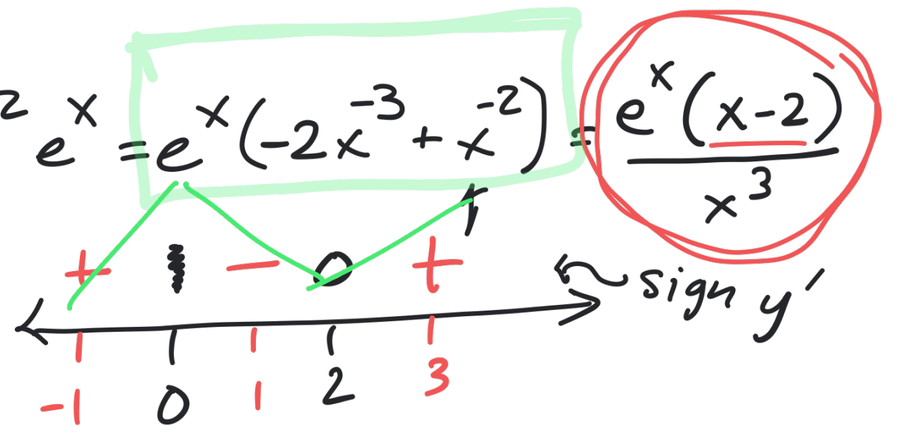
as $x \to -\infty$, $x^2 \to \infty$, $e^x \to 0$

ef $y = x^{-2}e^x$

$y' = -2x^{-3}e^x + x^{-2}e^x = e^x(-2x^{-3} + x^{-2}) = \frac{e^x(x-2)}{x^3}$

y' undef $x=0$

$y'=0$ when $x=2$



as $x \to -\infty$, $x^2 \to \infty$, $e^x \to 0$

(ef) $y = x^{-2} e^x$

$y' = -2x^{-3} e^x + x^{-2} e^x = e^x(-2x^{-3} + x^{-2}) = \dfrac{e^x(x-2)}{x^3}$

y' undef $x = 0$

$y' = 0$ when $x = 2$

answer: y is increasing on $(-\infty, 0) \cup (2, \infty)$
and decreasing on $(0, 2)$

local min at $x = 2$, $f(2) = e^2/4$.
no local max

(g) $y'' = e^x(-2x^{-3} + x^{-2}) + e^x(6x^{-4} - 2x^{-3}) = e^x(-4x^{-3} + x^{-2} + 6x^{-4})$

$= \dfrac{e^x(x^2 - 4x + 6)}{x^4}$

y'' undef at $x = 0$, $y'' > 0$ for all x.

ans: y is ccup $(-\infty, 0) \cup (0, \infty)$
no inflection pts.

(h) graph

y

x^1

y'' undef at $x=0$, $y''>0$ for all x.

ans: y is ccup $(-\infty,0)\cup(0,\infty)$
no inflection pts.

(h) graph