9 b) $f(x) = x^2 \cdot e^{-x}$ for $x \geq 0$

- $f'(x) = 0 \Rightarrow$ As $(f(x) \cdot g(x))' = f'(x) \cdot g(x) + f(x) \cdot g'(x)$, we get:

$$f'(x) = 0 \Rightarrow 2x \cdot e^{-x} - (1) \cdot x^2 \cdot e^{-x} = 0$$
$$\Rightarrow e^{-x} \cdot (2x - x^2) = 0$$
$$\Rightarrow e^{-x} \cdot x(2 - x) = 0$$

$\Rightarrow$ As $x^{-a} = \frac{1}{x^a}$, we get:

$f'(x) = \frac{x(2-x)}{e^x} = 0$; which is 0 whenever the ~~deno~~ numerator is 0. Hence,

$x(2-x) = 0 \Rightarrow \boxed{x=0}$ or $2 - x = 0 \Rightarrow \boxed{x=2}$

- Now, check $f'(0)$ and $f'(2)$:

$\rightarrow f'(x=0) = 0$

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

- Now, check $f'(0<x<2)$ and $f'(x>2)$:

$\rightarrow f'(x=1) = \frac{1(2-1)}{e^1} = \frac{1}{e} = \boxed{e^{-1} > 0}$

$\rightarrow f'(x=3) = \frac{3 \cdot (2-3)}{e^3} = \frac{1}{e^3} \cdot (3)(-1) \Rightarrow \frac{1}{e^3}(-3) = \boxed{-3 \cdot \frac{1}{e^3} < 0}$

Hence, as f' is increasing between 0 and 2 and decreasing afterwards, 0 is the minimum and 2 the maximum.