Review Quick Hit (2)

1. Find the solution $y(x)$ with $y(0) = 4$ of the differential equation

$$\frac{dy}{dx} = x^2 y$$

2. Find the average value of the function $g(x) = \frac{x^2}{x^3-1}$ on the interval $[2, 4]$

3. Compute $\int_0^\infty xe^{-x^2}\, dx$