Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [5 points] Consider the function $f(x) = \dfrac{x}{(x^2 + 7)^3}$.

   (a) Calculate the integral $\displaystyle\int_1^R f(x)dx$.

   (b) Calculate the integral $\displaystyle\int_1^{+\infty} f(x)dx$. (Hint: Use the result of Part (a)!)

2. [5 points] Find the arc length s of the graph $f(x) = x^{3/2}$ over the interval $[4, 8]$.