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

1. Compute the definite integral $\int_1^2 \frac{(x+1)^2}{x^2}\,dx$ (Be careful! Follow only legal steps.)

2. Find the area of the region *in the first quadrant* that is enclosed by the graphs of $f(x) = \frac{1}{2}x^2$ and $g(x) = -\frac{1}{2}x^2 + \frac{1}{4}$.