(1 pt) 0. Follow the instructions on this exam and any additional instructions given during the exam.

(6 pt) 1. Evaluate the integral using any correct method: \[ \int \frac{1}{x(\ln(x))^2} \, dx \]
(7 pt) 2. Evaluate the integral using any correct method: \( \int x \sin(3x) \, dx \)
(7 pt) 3. Evaluate the integral using any correct method: \[ \int_{0}^{\pi/2} [\sin(\theta)]^4 [\cos(\theta)]^3 \, d\theta \]
(7 pt) 4. Evaluate the integral using any correct method: \[ \int_0^\infty \frac{1}{x^2 + 4} \, dx \]
5. (7 pt) The curves $y^2 = 2x$ and $x^2 = y$ are shown in the graph below. Compute the points of intersection and compute the area of the enclosed region.