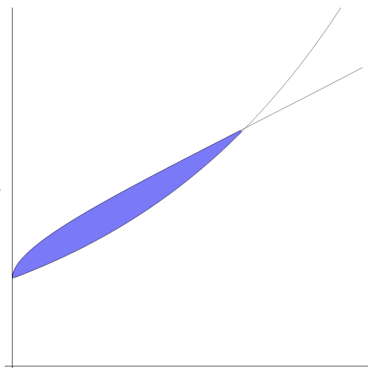


YOUR NAME: _____

George Voutsadakis

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. Consider the domain \mathcal{D} bounded by $y = e^x$ and $y = e^{\sqrt{x}}$.



- (a) Express \mathcal{D} formally as both a Type I and a Type II region.

- (b) Compute $\iint_{\mathcal{D}} (\ln y)^{-1} dA$ over the domain \mathcal{D} of Part (a).

2. (a) Draw on the xy -plane the region

$$\mathcal{D} = \{(x, y) : x^2 + y^2 \leq 4, y \geq 1\}.$$

(b) Express the region \mathcal{D} (of Part (a)) formally in the same way in polar coordinates.

(c) Compute the integral $\iint_{\mathcal{D}} x dA$ using double integration in polar coordinates.