Mark: \_\_\_\_\_ / 18

## Mini-math Div 3/4: Wednesday, December 4, 2024 (8.7-8.13) - 20 minutes

- 1. In this question, you do not need to simplify your answer. Find an integral (but do not evaluate) that represents the volume of the solid whose base is the region R bounded by y = x/2 and  $y = \sqrt{2x}$ , if:
  - (a) (2 points) cross-sections perpendicular to the x-axis are rectangles whose heights are twice their base.

(b) (2 points) cross-sections perpendicular to the x-axis are right isosceles triangles whose hypotenuse lies on the base.

(c) (2 points) cross-sections perpendicular to the y-axis are semi-circles.

(d) (2 points) cross-sections perpendicular to the y-axis are right isosceles triangles whose hypotenuse does not lie on the base.

- 2. In this question, you do not need to simplify your answer. Consider the region R bounded by y = x/2 and  $y = \sqrt{2x}$ .
  - (a) Find an integral (but do not evaluate) that represents the volume of the solid of revolution if we revolve the region R:
    - i. (2 points) about the *x*-axis.

ii. (2 points) about the *y*-axis.

iii. (2 points) about the line y = -1.

iv. (2 points) about the line x = 10.

(b) (2 points) Find an integral (but do not evaluate) that represents the perimeter of the region R.