



BC.Q404.REVIEW ASSESSMENTS

(Part 5)

Area Volume Perimeter + (Improper Integrals)

(20 points)

CALCULATOR PERMISSION VARIES

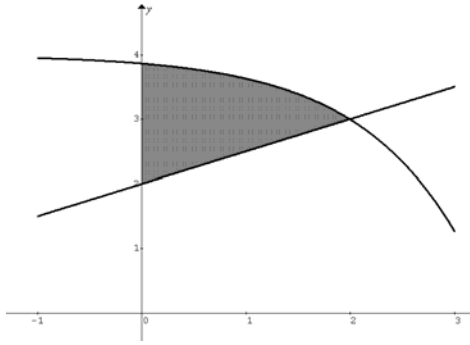
NAME:

DATE:

BLOCK:

I (*print name*) _____ certify that I wrote and fully understand **all** marks made in this assessment. I did not write anything that I do not understand. I would now, having completed this assessment, be able to make similar (but equally accurate) responses if asked complete the same exact assessment on my own.

Signature:



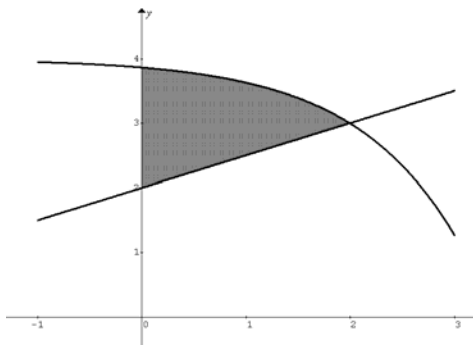
1. Consider the shaded region R, in the first quadrant, bounded by $y = 2 + \frac{x}{2}$ and $y = 4 - e^{(x-2)}$.

CALCULATORS PERMITTED

A. Write, but do not evaluate an expression involving one or more integrals used to find the area of R.

B. **Find** the volume of the solid that results in revolving region R about the line $y = 5$.

C. Write, but do not evaluate an expression involving one or more integrals used to find the volume of the solid that results in revolving region R about the line $y = 1$.



1. Consider the shaded region R, in the first quadrant, bounded by $y = 2 + \frac{x}{2}$ and $y = 4 - e^{(x-2)}$.

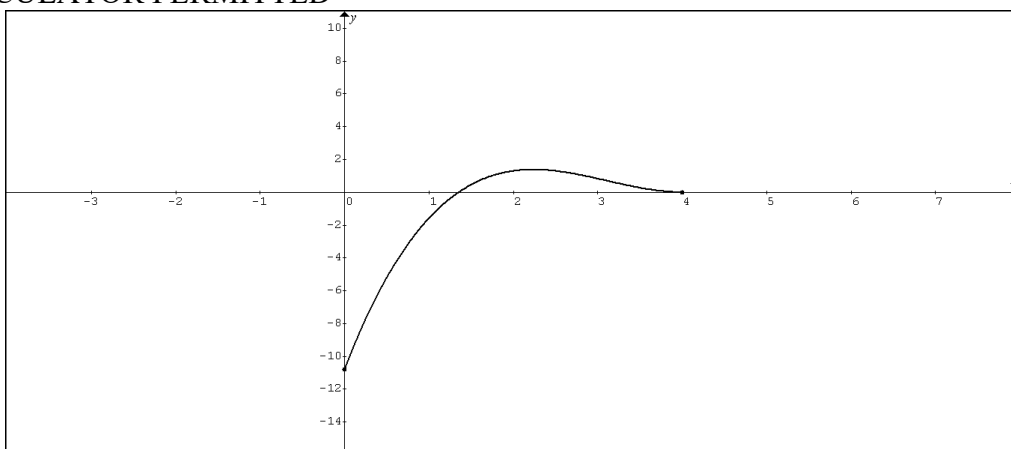
CALCULATORS PERMITTED

D. The region R is the base of a solid. For each x the cross section of the solid taken perpendicular to the x -axis is a rectangle whose base lies in R and whose height is twice its base. Write, but do not evaluate, an expression involving one or more integrals used to find the volume of the solid.

E. The region R is the base of a solid. For each y the cross section of the solid taken perpendicular to the y -axis is a square whose base lies in R. Write, but do not evaluate, an expression involving one or more integrals used to find the volume of the solid.

F. Write, but do not evaluate, an expression involving one or more integrals used to find the perimeter of the region R.

2. CALCULATOR PERMITTED

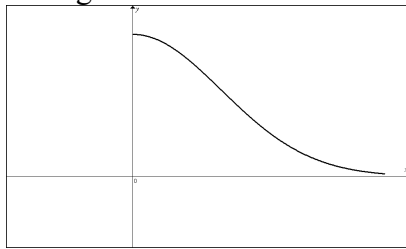


2. Consider the function $f(x) = 0.5x^3 - 4.675x^2 + 13.4x - 10.8$ defined on the interval $0 \leq x \leq 4$ as shown in the diagram above. **Find** the area bounded by $f(x)$ and the x -axis.

3. (NO CALCULATOR) **Find** the length of the curve $y = \int_0^x \sqrt{t^2 - 1} \, dt$ from $x = 1$ to $x = 2$.

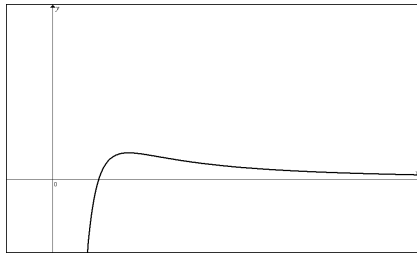
4. (NO CALCULATOR) Consider the graph of h given by $h(x) = e^{-x^2}$ for $0 \leq x < \infty$.

Let R be the unbounded region in the first quadrant below the graph of h . Find the volume of the solid generated when R is revolved about the y -axis.



5. (NO CALCULATOR)

Find the area of the region in the first quadrant that lies under the curve $y = \frac{\ln x}{x^2}$.



6. (NC) Use the integral test to determine whether $\sum_2^{\infty} \frac{1}{n \ln n}$ converges or diverges. Show work.