

Worksheet #9

Math 231 AD1

Exam Post-Mortem

1. Great article: www.tinyurl.com/mahoney_post-mortem
2. How did things go? Better or worse than expected?
3. What did you do right? What went well?
4. What was a waste of time? What did you do that did not help?
5. What can you improve on? What did you miss?

Warm-up

1. Consider a function $f(x)$ on an interval $[a, b]$:
 - (a) Using ds , give the formula for the arc length.
 - (b) Modify the above formula to give the surface area when $f(x)$ is revolved around the x -axis.
 - (c) Using dx , give the formula for the arc length.
 - (d) Using dx , give the formula for the surface area revolved around the x -axis.

Arc Length and Surface Area

2. Sketch the curve $y = 3 - 3x$ on $[0, 1]$.
 - (a) Use geometry to compute its length.
 - (b) Use integration to compute its length.
 - (c) Find the surface area for the curve when it is rotated about the x -axis.
 - (d) Find the surface area for the curve when it is rotated about the y -axis.
3. Find the length of $y = 1 + 6x^{3/2}$ on $[0, 1]$.
4. Find the length of $y = \frac{x^3}{3} + \frac{1}{4x}$ on $[1, 2]$.
5. Find the surface area of $y = x^3$ on $[0, 2]$ when revolved about the x -axis.
6. Find the surface area of $y = 1 - x^2$ on $[0, 1]$ when revolved about the y -axis.