C2-UA.491: calc 2

Practice Exam

Generated on August 29, 2025

Total: 100 points

1. Find the volume of the solid generated by revolving the region bounded by the curves $y = x^2$ and $y = 4$ about the x-axis. Use the disk/washer method.

2. Evaluate the integral "+$(x^3 + 2x^2 - 5x + 7) / (x^2 + 1)$ dx using polynomial long division and partial fraction decomposition.

3. Determine whether the series :2 †ãÓ Fò !â' †ë" ² ' ò †ë2 ² &â' 6öçfW&vW2 or diverges. Justify your answer using an appropriate convergence test.

4. Find the arc length of the curve $y = (x^3/3) + (1/(4x))$ from x = 1 to x = 3.

5. A particle moves along a line with velocity $v(t) = t^2 - 4t + 3$ for 0 "d t "d 5. Find the total distance traveled by the particle during this time interval.

6. Evaluate the improper integral "+(0 to ") xe {.2 G, W6-ær -çFVw& F-öâ '' 'G2à

7. Find the Taylor series expansion for f(x) = e.2 6VçFW&VB B , Ò "â w&—FR ÷WB F†R first four terms of the series.

8. Find the area of the region enclosed by the polar curve r = 2 + 2cos(;,'à

9. Determine the interval of convergence for the power series :2 †ãÓ Fò !â' [(x - 3) •] / (n + 1)².

10. Use the method of cylindrical shells to find the volume of the solid obtained by rotating the region bounded by $y = x^2$ and $y = x$ about the y-axis.