C2-UA.160: calc 2

Practice Exam

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Total: 100 points

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1. Find the volume of the solid generated by revolving the region bounded by the curves y = x² and y = 4 about the x-axis. Use the disk/washer method.

2. Evaluate the integral "+(x³ + 2x² - 5x + 1) / (x² + 1) dx using polynomial long division and partial fraction decomposition.

3. Determine the convergence or divergence of the series :2 †ãÓ Fò !â’ †ë" ² 1) / (n³ + 2n). Justify your answer using an appropriate test.

4. Find the arc length of the curve y = (x³/6) + (1/(2x)) from x = 1 to x = 2.

5. Find the area of the surface generated by revolving the curve y = " (x), 1 "d x "d 4, about the x-axis.

6. A particle moves along a line so that its velocity at time t is given by v(t) = t² - 4t + 3. Find the total distance traveled by the particle from t = 0 to t = 4.

7. Find the Taylor series for f(x) = e^(-x²) centered at x = 0. Write out the first four non-zero terms.

8. Evaluate the improper integral "+(0 to ") x*e^(-x²) dx.

9. Use the method of cylindrical shells to find the volume of the solid generated by rotating the region bounded by y = x³ and y = x about the y-axis.

10. Find the interval of convergence for the power series :2 †ãÓ Fò !â’ [(x-2) • / (n² + 1)]. Include a check for convergence at the endpoints.