MATH 76

Test 2

October 29, 2004

Name:_____

- No books or calculators are allowed. One page of notes is allowed.
- Please show all your work.
- Please simplify your answers.

1. Estimate the value of the integral $\int_{-3}^{3} \frac{1}{x^2+1} dx$ using the trapezoidal rule with $n = 6$.

2. Is the integral $\int_{1}^{\infty} \frac{\ln x}{x} dx$ convergent or divergent? Explain why. If it is convergent, evaluate it.

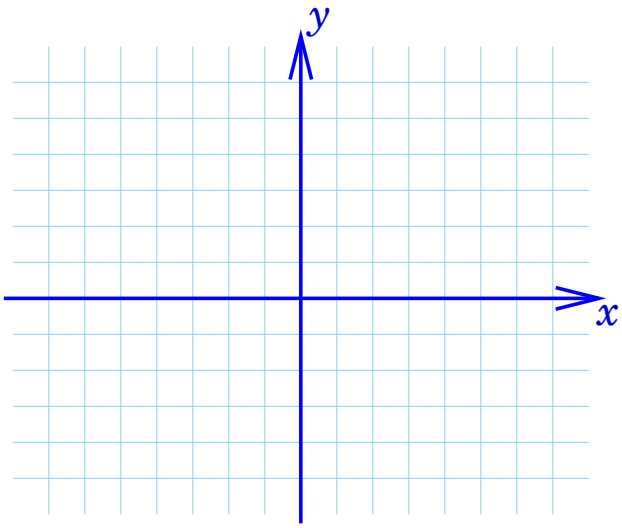
3. Set up, but do not evaluate, an integral for the length of the curve $y = x^3$ from the point $(0, 0)$ to the point $(2, 8)$.

4. The curve $y = x^2$ between $x = 1$ and $x = 2$ is rotated about the y-axis. Find the area of the obtained surface.

5. (a) Solve the equation $xyy' = 1$.

(b) Find a solution of the above equation that satisfies the initial condition $y(1) = 2$.

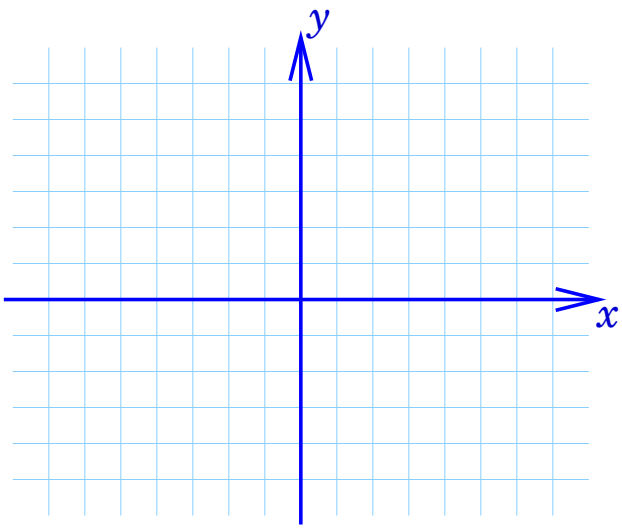
6. Sketch the curve $x = \sqrt{t} - 1$, $y = t - 2$ for $0 \leq t \leq 4$ and indicate with an arrow the direction in which the curve is traced as t increases.



7. (a) Find polar coordinates of the point whose Cartesian coordinates are $(1, 1)$.

(b) Find Cartesian coordinates of the point whose polar coordinates are $\left(2, \frac{\pi}{2}\right)$.

(c) Sketch the curve whose equation in polar coordinates is $r = 2$.



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Problem	Value	Your score
1	6	
2	6	
3	5	
4	8	
5	9	
6	7	
7	9	
Total	50	

Your total score in this class so far is out of .

Your current grade is .