

MATH 162 FINAL EXAM, SPRING 2007

Simplify answers. No work, no credit		Name:	Score	
1.	a) Find: $\int x^2 e^{4x} dx$.	b) Find: $\int \tan^2 t dt$.	1	11
			2	12
			3	13
			4	14
			5	15
			6	16
			7	17
			8	18
Ans: _____.		Ans: _____.		
2.	a) Find: $\int \ln(x+1) dx$.	b) Find: $\int \cos^3 z dz$.	9	19
			10	20
			Tot	
Ans: _____.		Ans: _____.		
3.	a) Find: $\int_0^\infty \frac{1}{16+t^2} dt$.	b) Find: $\int_1^2 \frac{1}{(x-1)^{1/3}} dx$.	Ans: _____.	
			Ans: _____.	
4.	Find: $\int \frac{2x}{x^2-x-20} dx$.	Ans: _____.		
		Ans: _____.		
5.	Find: $\int \sqrt{9-x^2} dx$.	Ans: _____.		
		Ans: _____.		
Extra Space				

Fin162S07p2.		Name:	
6.	Find the length of the curve: $y = \frac{x^4}{16} + \frac{1}{2x^2}$, $1 \leq x \leq 2$.	Ans: _____.	
7.	A plate of density $\sigma = x^2y^2$ has the shape of a triangle bounded by $x + y = 4$, $x = 0$, and $y = 0$. Set up (do not compute!) the integrals for: a) The x coordinate of the centroid.	b) The y coordinate of the center of mass.	Ans: _____.
8.	a) Solve: $xy' + 3y = \frac{\sin x}{x^2}$.	b) Solve: $(x^2 + 1)y' = xy$.	Ans: _____.
9.	a) Solve: $y'' + 6y' + 5y = 0$, $y(0) = 0$, $y'(0) = 4$.	b) Solve: $y'' + 2y' + 2y = 0$.	Ans: _____.
10.	A drink at 5°C is left in a 20°C room. After 20 min. the drink is at 10°C . Find the temperature of the drink: a) At any time	b) After 40 minutes.	Ans: _____.
Extra Space			

Fin162S07p3.	Name:
11. Eliminate the parameter and identify the curve: a) $x = 3 + 5t, y = 1 - t$. Curve:..... Eq:.....	b) $x = 2 + \cos 2t, y = -3 + \sin 2t$. Curve:..... Eq:.....
12. Let $x = t^2 + 1$ and $y = t^3 - 12t$. Find: a) dy/dx . Ans:.....	b) d^2y/dx^2 . Ans:.....
13. Consider one loop of the rose $r = \cos 2\theta$. Set up and compute the integral for the area. Ans:.....	Ans:.....
14. Identify the conic and find the coordinates of the foci: a) $r = 10/(3 - 2 \cos \theta)$. Conic:..... Foci:.....	b) $x = 3 \cosh t, y = 4 \sinh t$. Conic:..... Foci:.....
15. a) Compute: $\lim_{n \rightarrow \infty} \frac{\ln n}{\sqrt{n}}$ Ans:.....	b) Sum the series: $\sum_{n=1}^{\infty} \frac{2^{2n+1}}{5^n}$ Ans:.....
Extra Space	

Fin162S07p4.		Name:	
16.	a) Test for convergence: $\sum_{n=1}^{\infty} \frac{\ln n}{n}$.	b) Test for convergence: $\sum_{n=2}^{\infty} \frac{n^2}{n^4 - 1}$.	
	C D by: _____ test.	C D by: _____ test.	
17.	Test for absolute or conditional convergence: $\sum_{n=1}^{\infty} (-1)^n \frac{3}{5n + 1}$.		
	CC CA D by: _____ test .		
18.	Test for absolute or conditional convergence: $\sum_{n=1}^{\infty} \frac{(-1)^n (n!)^2}{(2n)!}$.		
	CC CA D by: _____ test .		
19.	Find the radius of convergence and the interval of convergence: $f(x) = \sum_{n=1}^{\infty} \frac{(4x - 1)^n}{n4^n}$.		
	a) Radius of Convergence	b) Interval of Convergence.	
	Ans: _____.	Ans: _____.	
20.	a) Find the Maclaurin series: $f(x) = x \tan^{-1} x$.	b) Evaluate as an infinite series: $\int x \cos(x^3) dx$.	
	Ans: _____.	Ans: _____.	
	Comments about this test.		