\triangleright $\mathbf{ADH},$ TR 3:00-3:50, Dara Zirlin

MATH 220 Test 3 Spring 2016

Name	NetID

- Sit in your assigned seat (circled below).
- Circle your TA discussion section.

▶ **AD1**, TR 9:00-10:50, Hannah Burson

- Do not open this test booklet until I say START.
- Turn off all electronic devices and put away all items except a pen/pencil and an eraser.
- Remove hats and sunglasses.
- You must show sufficient work to justify each answer.
- While the test is in progress, we will not answer questions concerning the test material.
- Do not leave early unless you are at the end of a row.
- Quit working and close this test booklet when I say STOP.
- Quickly turn in your test to me or a TA and show your Student ID.

	▷ AD2 , TR 1:00-2:50, Cassie Christenson							I	\triangleright ADJ, TR 9:00-9:50, Xujun 'Henry' Liu																			
	\triangleright ADA , TR 8:00-8:50, Iftikhar Ahmed								I	\triangleright ADK, TR 10:00-10:50, Xujun 'Henry' Liu																		
	\triangleright ADB, TR 9:00-9:50, Iftikhar Ahmed								I	\triangleright ADL, TR 11:00-11:50, Jooyeon 'Jane' Chung																		
	\triangleright ADC, TR 10:00-10:50, Elizabeth 'Liz' Tatum								1	▷ ADM , TR 12:00-12:50, Jooyeon 'Jane' Chung																		
	▷ ADD , TR 11:00-11:50, Elizabeth 'Liz' Tatum							1	ightharpoonup ADN, TR 1:00-1:50, Xiaolong 'Hans' Han																			
	▶ ADE , TR 12:00-12:50, Emily Heath								1	▷ ADO , TR 2:00-2:50, Martino Fassina																		
	▶ ADF , TR 1:00-1:50, Emily Heath							I	▷ ADP , TR 3:00-3:50, Martino Fassina																			
	\triangleright ADG , TR 2:00-2:50, Dara Zirlin							I	▷ ADQ , TR 4:00-4:50, Xiaolong 'Hans' Han																			
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1. (10 points) Use a linear approximation to estimate $\ln (7/8)$. Write your answer as either a simplified fraction or a decimal value.

2. (10 points) Suppose that f(x) is a polynomial which satisfies the following conditions.

Evaluate the following quantities.

(a)
$$\int_{7}^{21} (20f(x) + 3) dx$$

(b)
$$\int_{1}^{2} 54x^{2} f(2x^{3} + 5) dx$$

3. (10 points) Let
$$g(x) = \int_{\sin(9x)}^{10} \frac{1}{t^{16} + 1} dt$$
. Find $g'(x)$.

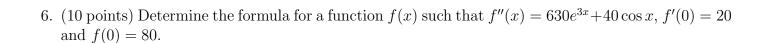
4. (10 points) Evaluate the following limit. Be sure to use proper notation throughout your evaluation of this limit. Simplify your answer.

$$\lim_{n \to \infty} \sum_{k=1}^{n} \left(\frac{60k + 12n}{n^2} \right)$$

5.	(10 points) Let R be the finite region bounded by the graphs of $y = \frac{1}{5}x$ and $y = \sqrt{x}$. These curves
	intersect at the origin and at the point $(x,y)=(25,5)$. Revolve \mathbf{R} around the horizontal line
	y = 8 to form a solid. In the following manner, set up <u>but do not evaluate</u> definite integrals which
	represent the volume of the solid. Use proper notation.

(a) Integrate with respect to x.

(b) Integrate with respect to y. (The integrands in parts (a) and (b) should be different.)



7. (10 points) Find the average value of the function $f(x) = \frac{32x}{\sqrt{2x^2 + 49}}$ on the interval [0, 4]. Simplify your answer.

8. (10 points) Evaluate the indefinite integral.

$$\int \frac{9x^2 + 84x + 9}{x^2 + 1} \, dx$$

9. (10 points) Evaluate the indefinite integral.

$$\int \sec^{37}(x)\tan^3(x)\,dx$$

 $10.\ (10\ \mathrm{points})$ Evaluate the indefinite integral.

$$\int \frac{91x^{12}}{x^{26}+1} \, dx$$

Students – do not write on this page!

1.	(10 points)	_
2.	(10 points)	_
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