Test 2 **MATH 220** Fall 2014

Name	m NetID

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

▶ AD1 , TR 11:00-12:50, Melinda Lanius ▶							▶ ADJ , TR 9:00-9:50, Vanessa Rivera-Quiñones																					
	\triangleright AD2 , TR 9:00-10:50, Ben Fulan							▷ ADK , TR 10:00-10:50, Vanessa Rivera-Quiñones																				
	\triangleright AD3 , TR 1:00-2:50, Mychael Sanchez								▶ ADL , TR 11:00-11:50, David Poole																			
	\triangleright ADA , TR 8:00-8:50, Derek Jung								\triangleright ADM , TR 12:00-12:50, Iftikhar Ahmed																			
	▶ ADB , TR 9:00-9:50, Derek Jung								▷ ADN , TR 1:00-1:50, Kaiwen Liu																			
	▶ ADC , TR 10:00-10:50, Andrew McConvey								▷ ADO , TR 2:00-2:50, Hannah Burson																			
	▷ ADD , TR 11:00-11:50, Andrew McConvey									▷ ADP , TR 3:00-3:50, Hannah Burson																		
	▶ ADE , TR 12:00-12:50, David Poole								▷ ADR, TR 9:00-9:50, Stephen Berning																			
	\triangleright ADF , TR 1:00-1:50, Alonza Terry								▶ ADS , TR 12:00-12:50, Sarah Mousley																			
	\triangleright ADG , TR 2:00-2:50, Alonza Terry								▶ ADT , TR 2:00-2:50, Kaiwen Liu																			
	▷ ADH , TR 3:00-3:50, Argen West									$\triangleright A$	DU	J, Tl	R 3:0	00-3:	50, 1	ftik	nar Al	$_{ m hmed}$										
	\triangleright	ΑI	ΟI,	TR	t 4:	00-4:5	50, A	rge	n W	est																		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
1	2	3	4	5	6	K																K		1	2	3		
1	2	3	4	5	6	J	J	1	2	3	4	5	6	7	8	9	10	11	12	13	J	$_{ m J}$	1	2	3	4	5	6
1	3	2	4	5	6	I	Ι	1	2	3	4	5	6	7	8	9	10	11	12	13	I	I	1	2	3	4	5	6
1	2	3	4	5	6	Н	Н	1	2	3	4	5	6	7	8	9	10	11	12	13	Н	$_{ m H}$	1	2	3	4	5	6
1	_	•	_		-			_	_					-		_							1	_		_		•
1	2	3	4	5	6	G	G	1	2	3	4	5	6	7	8	9	10	11	12	13	G	G		2	3	4	5	6
1	2	3	4	5	6	F	F	1	2	3	4	5	6	7	8	9	10	11	12	13	F	\mathbf{F}	1	2	3	4	5	6
1	2	3	4	5	6	E	\mathbf{E}	1	2	3	4	5	6	7	8	9	10	11	12	13	E	\mathbf{E}	1	2	3	4	5	6
1	2	3	4	5	6	D	D	1	2	3	4	5	6	7	8	9	10	11	12	13	D	D	1	2	3	4	5	6
1	2	3	4	5	6	\mathbf{C}	\mathbf{C}	1	2	3	4	5	6	7	8	9	10	11	12	13	С	\mathbf{C}	1	2	3	4	5	6
1	2	3	4	5	6	В	В	1	2	3	4	5	6	7	8	9	10	11	12	13	В	В	1	2	3	4	5	6
_	_	3	-	9			A	1	2	3	-	9	3	•	J	J	10	1	2	3	A		•	_	3	•	9	5
							Α	1	4	J								T	4	၁	Α.							

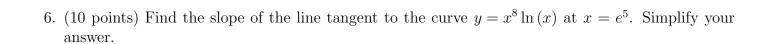
1. (8 points) Find f'(x) given that $f(x) = x^{18} + 17x^7 - 42x + 123$

2. (8 points) Find $\frac{dv}{dt}$ given that $v=e^{13t}\tan{(25t)}$

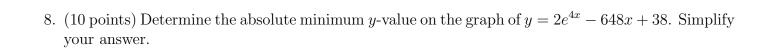
3. (8 points) Find h'(r) given that $h(r) = \left(\frac{r^8 + 22}{r^{17} + 62}\right)^{14}$

4. (8 points) Find w'(v) given that $w(v) = \cos(v^{12}e^v)$

5. (8 points) Find $\frac{dy}{dx}$ given that $y = (x^5 + 8)^{6x^2}$



7. (10 points) The graph of a function y = f(x) has the property that the slope of the tangent line at each point on the graph is equal to one third of its y-coordinate. If the graph goes through the point $(\ln (64), 128)$, then find a formula for f(x). Simplify your answer.



9. (10 points) A polynomial f(x) has the following second derivative.

$$f''(x) = (x-4)^2 (x+7)^6 (x^2-196) (x^2+25)$$

Find the intervals of concavity for f(x). State each x-value at which the graph of f(x) has an inflection point.

10.	(10 points) The top of a ladder slides down a vertical wall at a rate of 8 m/s . At the moment when the bottom of the ladder is 4 m from the wall, it slides away from the wall at a rate of 15 m/s . How long is the ladder?

Alternate version for problem 10:

A plane flies horizontally at an altitude of 12 km and passes directly over a tracking telescope on the ground. When the angle of elevation is $\pi/4$ rad, this angle is decreasing at a rate of 0.625 rad/min. How fast is the plane traveling at that time?

11. (5 points each) Evaluate the following limits. Simplify your answers.

(a)
$$\lim_{x \to 0} \frac{e^{6x} - 6x - \cos x}{x^2}$$

(b)
$$\lim_{x \to \infty} \frac{10 \arctan(2x) - 5\pi}{10 \arctan(12x) - 5\pi}$$

Students – do not write on this page!

1.	(8 points)
2.	(8 points)
3.	(8 points)
4.	(8 points)
5.	(8 points)
6.	(10 points)
7.	(10 points)
8.	(10 points)
9.	(10 points)
10.	(10 points)
11a.	(5 points)
11b.	(5 points)
${f T}$	OTAL (100 points)