AL1 (MWF 11:00-11:50) AL3 (MWF 3:00-3:50)

MATH 220 **Test 2** **Spring 2016**

Name ______________________________ **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 9:00-10:50, Hannah Burson
▷ **AD2**, TR 1:00-2:50, Cassie Christenson
▷ **ADA**, TR 8:00-8:50, Iftikhar Ahmed
▷ **ADB**, TR 9:00-9:50, Iftikhar Ahmed
▷ **ADC**, TR 10:00-10:50, Elizabeth 'Liz' Tatum
▷ **ADD**, TR 11:00-11:50, Elizabeth 'Liz' Tatum
▷ **ADE**, TR 12:00-12:50, Emily Heath
▷ **ADF**, TR 1:00-1:50, Emily Heath
▷ **ADG**, TR 2:00-2:50, Dara Zirlin
▷ **ADH**, TR 3:00-3:50, Dara Zirlin
▷ **ADJ**, TR 9:00-9:50, Xujun 'Henry' Liu
▷ **ADK**, TR 10:00-10:50, Xujun 'Henry' Liu
▷ **ADL**, TR 11:00-11:50, Jooyeon 'Jane' Chung
▷ **ADM**, TR 12:00-12:50, Jooyeon 'Jane' Chung
▷ **ADN**, TR 1:00-1:50, Xiaolong 'Hans' Han
▷ **ADO**, TR 2:00-2:50, Martino Fassina
▷ **ADP**, TR 3:00-3:50, Martino Fassina
▷ **ADQ**, TR 4:00-4:50, Xiaolong 'Hans' Han

310	311	312	R	313	314	315	316	317	318	—	—	319	320	321	322	323	R	324	325	326
291	292	293	Q	294	295	296	297	298	299	300	301	302	303	304	305	306	Q	307	308	309
272	273	274	P	275	276	277	278	279	280	281	282	283	284	285	286	287	P	288	289	290
253	254	255	O	256	257	258	259	260	261	262	263	264	265	266	267	268	O	269	270	271
234	235	236	N	237	238	322	240	241	242	243	244	245	246	247	248	249	N	250	251	252
216	217	218	M	219	220	221	222	223	224	225	226	227	228	229	230		M	231	232	233
199	200	201	L	202	203	204	205	206	207	208	209	210	211	212	213		L	214	215	216
181	182	183	K	184	185	186	187	188	189	190	191	192	193	194	195		K	196	197	198
163	164	165	J	166	167	168	169	170	171	172	173	174	175	176	177		J	178	179	180
145	146	147	I	148	149	150	151	152	153	154	155	156	157	158	159		I	160	161	162
127	128	129	H	130	131	132	133	134	135	136	137	138	139	140	141		H	142	143	144
109	110	111	G	112	113	114	115	116	117	118	119	120	121	122	123		G	124	125	126
91	92	93	F	94	95	96	97	98	99	100	101	102	103	104	105		F	106	107	108
73	74	75	E	76	77	78	79	80	81	82	83	84	85	86	87		E	88	89	90
55	56	57	D	58	59	60	61	62	63	64	65	66	67	68	69		D	70	71	72
38	39	40	C	41	42	43	44	45	46	47	48	49	50	51			C	52	53	54
21	22	23	B	24	25	26	27	28	29	30	31	32	33	34			B	35	36	37
5	6	7	A	8	9	10	11	12	13	14	15	16	17				A	18	19	20
	1	2																3	4	

FRONT OF ROOM – 141 Wohlers Hall

1. (10 points) Find $f'(x)$ given that $f(x) = \sec\left(\ln\left(\cot\left(x\right)\right)\right)$

2. (10 points) Find $w'(t)$ given that $w(t) = t^{42}\arctan\left(t^{25}\right)$

3. (10 points) Find $g'(x)$ given that $g(x) = \cos^4\left(e^{9x}\right)$

4. (10 points) Find $\dfrac{dy}{dx}$ given that $x^8 \sin\left(y^5\right) = 9x^7 + 4y^3$

5. (10 points) Evaluate the limit. You must fully justify your answer.

$$\lim_{x \to 0} \frac{\cos(20x) - 1}{e^{5x} - 5x - 1}$$

6. (10 points) Find the (x, y) coordinates for each inflection point on the graph of the function.

$$f(x) = 3x^5 - 50x^4 + 250x^3 - 314x + 42$$

7. (10 points) Find the absolute maximum y-value of the given function. Simplify your answer.

$$y = \frac{e^x}{e^{6x} + 15}$$

8. (10 points) Let $f(x) = \arctan(25x) - \arctan(x)$. Determine each interval where f is increasing and each interval where f is decreasing.

9. (10 points) Find the x-coordinate for the point on the graph of $y = 3x + 2$ which is closest to the point $(4, 0)$.

10. (10 points) Assume that oil spilled from a ruptured tanker spreads in a circular pattern whose radius increases at a constant rate of 12 feet per second. How quickly is the area of the spill increasing when the radius of the spill is 100 feet?

Students – do not write on this page!

1. (10 points) _____
2. (10 points) _____
3. (10 points) _____
4. (10 points) _____
5. (10 points) _____
6. (10 points) _____
7. (10 points) _____
8. (10 points) _____
9. (10 points) _____
10. (10 points) _____

TOTAL (100 points) _____