Math. 302-01
Spring, 2005
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First Examination

Monday, January 24, 2005

Instructions: This exam should be done on your own paper. Your name should be on each sheet and on the back of the last sheet; the answers should appear written carefully and in order. If in doubt, show intermediate steps: Full credit may not be given, even for correct answers, unless work is arranged clearly and explained. This exam is closed book. You may leave after handing in your exam paper, but be sure to check your answers carefully. Each entire problem is worth 30 points, while 10 points are free.

1. State which of the following tables can correspond to linear functions. For those that can correspond to a linear function, write down the function. For those that cannot correspond to a linear function, explain why not.

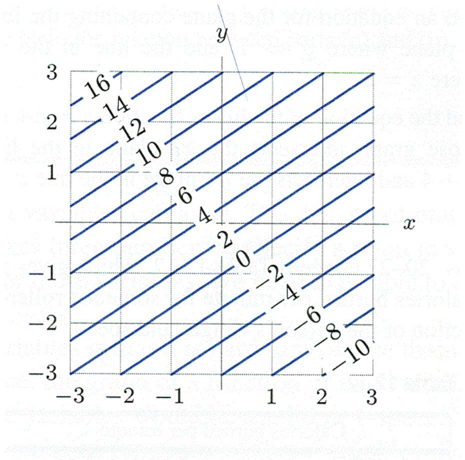
a)

	$y=-4$	$y=-2$	$y=0$	$y=2$	$y=4$
$x=1$	-6	0	6	12	18
$x=2$	-4	2	8	14	20
$x=3$	-2	4	10	16	22
$x=4$	0	6	12	18	24
$x=5$	2	8	14	20	26

b)

	$y=-4$	$y=-2$	$y=0$	$y=2$	$y=4$
$x=1$	-7	-3	1	5	9
$x=2$	-10	-4	2	8	14
$x=3$	-13	-5	3	11	19
$x=4$	-16	-6	4	14	24
$x=5$	-19	-7	5	17	29

2. Write down a linear function that can correspond to the following contour diagram.



3. (a) Write down an equation for the set of all points whose distance from the xy-plane is equal to the square of the point's distance from the z-axis.
   (b) Describe the graph of this equation, i.e. describe this set of points.
   (c) Sketch a rough graph of this set of points.