

Name \_\_\_\_\_

Homework 3  
Sections 12.3 & 12.4

1. (2) Problem #16 on page 660 of the text.

(a) \_\_\_\_\_ (b) \_\_\_\_\_ (c) \_\_\_\_\_ (d) \_\_\_\_\_ (e) \_\_\_\_\_

2. (2) Find an equation for the contour of  $f(x, y) = 2x^2y + 7xy^2 - 14$  that goes through the point  $(3, 5)$ .

3. (4) Sketch a contour diagram for  $f(x, y) = 3 + x - y^2$  with at least four labeled contours.

4. (3) Is there a function of two variables whose  $z = 0$  level curve consists exactly of the circles  $x^2 + y^2 = 4$  and  $x^2 + y^2 = 8$ ? If so, what is an example? If not, why not?

5. (5) Complete the partial table below so that it represents a linear function.

$x \setminus y$	-1	1	5
2	-8		
2.5	-9	1	
3.5			

6. (5) The contour diagram below shows three level curves of the linear function  $g(x, y)$ . Find a formula for  $g(x, y)$ .

