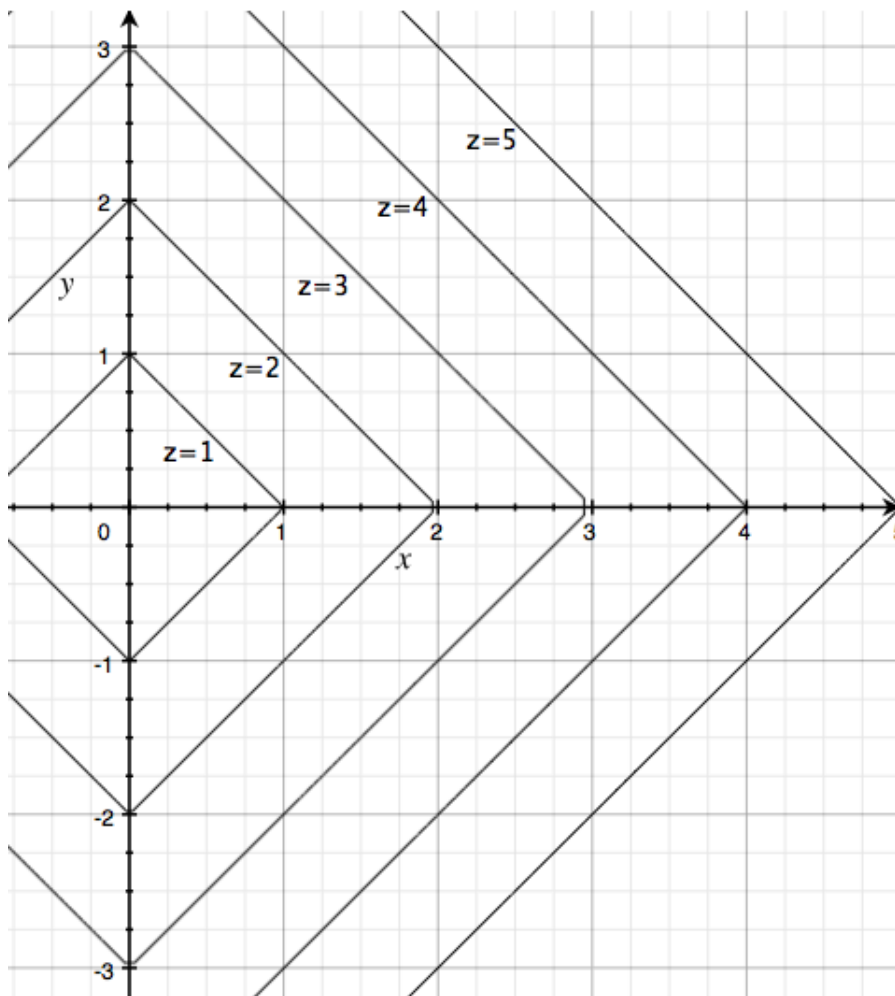


**MATH 231: Calculus of Several Variables**  
**Section 1, 107 Ag Sc & Ind Bldg,**  
**TR 9:05 AM - 9:55 AM**

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**Homework 17:** Due Thursday, November 7

1. Consider the level curves in the picture below. Sketch the gradient vector at the point  $(1, 1)$ .



2. (i) Find the gradient of the function. (ii) Evaluate the gradient at the given point.

(a)  $f(x, y) = 7x\sqrt{y}$ ,  $(1, 4)$

(b)  $f(s, t) = te^{st}$ ,  $(0, 2)$

(c)  $f(u, w) = \sin(uw)$ ,  $(2, 0)$

(d)  $f(x, y, z) = \sqrt{x^2 + y^2 + z^2}$ ,  $(3, 6, -2)$