

MAT 21 D - Problem Set 6  
Due beginning of discussion session on May  
18th

Problem numbers are from Thomas' Calculus, 13th edition. If unsure about which problem to solve, ask. Collaboration is permitted but every student must write his or her own solution; looking for solutions from external sources (books, the web, material from previous years, etc.) is prohibited.

**1 Solve and turn in the following problems:**

1. Consider the half parabolic arc  $y = x^2$  for  $x \in [0, 1]$ . Find the mass of that curve if the density is given by  $\delta(x, y) = x$ .
2. Find the work done by the gradient of  $f(x, y) = (x + y)^2$  clockwise around the circle  $x^2 + y^2 = 16$  from  $(0, 4)$  to itself.

**2 Solve but do not turn in the following problems:**

Section 16.1: 1, 3, 5, 7, 9, 19, 33, 34

Section 16.2: 1, 7, 13, 27, 43