

MAT 21 D - Problem Set 7
Due beginning of discussion session on June
1st

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. For what values of α will $\mathbf{F} = x\mathbf{i} + y\mathbf{j} + (z + \alpha xyz)\mathbf{k}$ be a gradient field?
2. Consider the vector field $\mathbf{F} = x\mathbf{i} + y\mathbf{j} + (z + xyz)\mathbf{k}$. Compute the circulation around the unit circle (center 0 and radius 1) on the xy plane, counterclockwise.

2 Solve but do not turn in the following problems:

Section 16.2: 29, 31, 35, 47

Section 16.3: 1, 9, 19 (recall from 16.2 the notation $\int_C M dx + N dy + P dz = \int_C \mathbf{F} \cdot d\mathbf{r}$), 23, 25, 29, 33 (b), 35.