

MA 330 ASSIGNMENT # 1

Answers to problems may be handwritten.

Here are some problems involving Egyptian fractions:

- (1) Show that, if n is odd, then $\frac{2}{n}$ can be written as a sum of two *distinct* unit fractions. That is, $\frac{2}{n} = \frac{1}{a} + \frac{1}{b}$, for some integers $a \neq b$. (Hint: try $a = \frac{n+1}{2}$.)
- (2) Use the previous problem to show that, for *any* integer $n > 2$, $\frac{2}{n}$ can be written as a sum of two distinct unit fractions.
- (3) Use the previous problem to show that, for any integer $n > 2$, $\frac{3}{n}$ can be written as a sum of three distinct unit fractions.
- (4) Show that, if $n > 2$ is even, then $\frac{4}{n}$ can be written as a sum of three distinct unit fractions.