Math 4410 HW 8 - Due Nov. 8 in class

1. Let (G, c) be a transportation network which contains two parallel edges e and e' oriented in opposite directions. Prove that there exists a maximum flow f for (G, c) in which $f(e) = 0$ or $f(e') = 0$. Construct an example where there are maximum flows f_1 and f_2 such that $f_1(e) > 0, f_1(e') = 0$ and $f_2(e) = 0, \ f_2(e') > 0$.

2. Same question as discussion problem 4 - except that now G is an undirected graph and all paths are paths in the usual sense.

3. Let N be a positive integer. Write down a simple formula for the number of positive integers less than or equal to N which do not have a common divisor (other than 1) with 42.