

m3hprob8.tex

### **M3H PROBLEMS 8. 4.3.2016**

Q1 (*Fundamental Theorem of Arithmetic, FTA*).

Every integer  $n \geq 2$  can be written uniquely (to within order) as a product of prime factors.

Q2 (*Basel problem: Leonhard Euler (1707-1783) in 1735*).

$$\zeta(2) := \sum_{n=1}^{\infty} 1/n^2 = \pi^2/6.$$

Euler used real methods. You may find it easier to use (i) Fourier Analysis, or (ii) Complex Analysis (details on my M2P3 or M3P16 websites).

NHB