

MATHEMATICS ENRICHMENT CLUB.
Problem Sheet 14, August 18, 2015¹

1.

Senior Questions

1. Express

$$\sum_{n=1}^{\infty} \frac{2n-1}{n(n+1)(n+2)}$$

as a fraction of two co-prime positive integers.

2. A small circle is located inside a larger circle, with the two circles touching at the point **A**. **P** is a point on the large circle, and **T** is a point on the small circle such that **PT** is tangent to the small circle. Prove that, provided **P** is not **A**, the ratio of lengths of **PT** and