

1. Is it true that  $x^n + y^n = z^n$  if  $x, y, z$  and  $n$  are positive integers?. Explain.

2. Prove that the real part of all non-trivial zeros of the function  $\zeta(z)$  is  $\frac{1}{2}$

3. Compute

$$\int_0^\infty \frac{\sin(x)}{x}$$