If a, b, c, d are four distinct positive quantities in G.P., then show that

a + d > b + c

SOLUTION :

AM > GM [because all terms are distinct the equality in the AM,GM inequality holds when all terms involved in the mean are equal but in the question, it's mentioned that a,b,c,d are different**]**

a, b, c, d are in GP

$b = \sqrt{ac}$

$c = \sqrt{bd}$

now,

$a + c > 2\sqrt{ac}$

$> 2b$ — (1)

$b + d > 2\sqrt{bd}$

$> 2c$ — (2)

add (1) & (2)

$(a + c) + (b + d) > 2b + 2c$

$\Rightarrow a + d > b + c$

hence proved