

Example 2 If $A = \cos^2\theta + \sin^4\theta$ for all values of θ , then prove that $\frac{3}{4} \leq A \leq 1$.

Example 5 Find the distance between the lines $3x + 4y = 9$ and $6x + 8y = 15$.

Example 7 A student has to answer 10 questions, choosing at least 4 from each of Parts A and B. If there are 6 questions in Part A and 7 in Part B, in how many ways can the student choose 10 questions?

Example 10 If $x \cos \theta = y \cos \left(\theta + \frac{2\pi}{3} \right) = z \cos \left(\theta + \frac{4\pi}{3} \right)$, then find the value of

$$xy + yz + zx.$$

Example 5 Find the sum of first 24 terms of the A.P. a_1, a_2, a_3, \dots if it is known that

$$a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 225.$$