

2) The probability that an item produced by a certain machine is defective is 0.05. A quality control scheme consists of selecting 10 items from a large batch produced by the machine and the whole batch if three or more items are defective. Find the probability that a batch is rejected giving your answer correct to four decimal places, 10^{-4} .

Exercise VI (2mks)

Find the algebraic form of the complex number $= \frac{(1+i)^4}{(\sqrt{3}-i)^3}$.

JULY 2009

EXERCISE I (5pts)

The complex plane is related the direct orthogonal frame (O, \vec{u}, \vec{v}) , graphic unit: 2cm.

1. Draw the circle whose centre is 0 and the radius 1 and
2. Indicate points A, B and D with respective affixes $\sqrt{3} + i, \sqrt{3} - i$ and $-\frac{1}{2} + \frac{\sqrt{3}}{2}i$ (1marke)
3. We consider the rotation R with centre 0 and angle $\frac{\pi}{3}$ and the translation T of vector with affix iR
 - a) Determine affixes $Z_{A'}$ and Z_B of points A' and B , respective image of A and B under the rotation R (0.75markes)
 - b) Determine the affix $Z_{D'}$ of D' where D' is image of D under the translation T (0.75markes)
 - c) Indicate points A', B' and D' . Determine the argument of the complex number $\frac{Z_{A'} - Z_{B'}}{Z_{D'}}$
Prove that the line (OD') is a median of triangle $(OA'B')$.

EXERCISES 2 AND 3 EXIST IN 2010 AHEAD.

EXERCISE 4(4PTS)

This exercise has 4 affirmations. Indicate for each of them if it is true or false and justify your answer. Given the function defined by $f(x) = \ln\left(\frac{2x+1}{x-1}\right)$

1. f is defined on $]1; +\infty[$ (0.5markes)
2. $f'(x) = -\frac{1}{(x-1)^2} \ln\left(\frac{2x+1}{x-1}\right)$ (1markes)
3. Line $x = 1$ is asymptote to the representative curve of f .
The representative curve of f admit a horizontal asymptote. (0.75mark)