2) The probability that an item produced by a certain machine is defective is 0.05. A quality control scheme consists of selecting 10items 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 $(0, \vec{u}, \vec{v})$, graphic unit: 2cm.

1. Draw the circle whose centre is 0 and the radius 1 and
2. Indicate points $A, B \text{ and } D$ with respective affixes $\sqrt{3}+i, \sqrt{3}-i \text{ and } -\frac{1}{2}+\frac{\sqrt{3}}{2}i$ (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 $Z_{D'} \text{ of } D'$ where D' is image of D under the translation T (0.75markes)

c) Indicate points $A', B' \text{ and } D'$. 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 $f(x) = In\left(\frac{2x+1}{x-1}\right)$

1. f is defined on $]1; +\infty[$ (0.5markes)
2. $f'(x) = -\frac{1}{(x-1)^2} In\left(\frac{2x+1}{x-1}\right)$ (1markes)
3. $Line\ x = 1$ is asymptote ton the representative curve of f.

The representative curve of f admit a horizontal asymptote.(0.75mark