MATHEMATICS DEPARTMENT

S.5 TRIGONOMETRY TEST

TIME: 1 HOUR

Instructions

Answer all questions.

1. (a) Find the value of tan A when $tan(A-45)=\frac{1}{3}$

   (b) Prove that $tanA+tanB=\frac{sin(A+B)}{cosAcosB}$

2. (a) Prove that $sin3A=3sinA-4sin^3A$

   (b) Solve the equation $3cos2\theta+sin\theta=1$ for values of θ from 0^o to 360^o inclusive.

3. Find the maximum and minimum values of $2sin\theta-5cos\theta$ and state the corresponding values of θ between 0^o to 360^o inclusive.

4. If A, B, C are angles of a triangle, prove that

   (a) $CosA+CosB+CosC-1=4sin\frac{A}{2}\ sin\frac{B}{2}\ sin\frac{C}{2}$

   (b) $tanA+tanB+tanC=tanA\ tanB\ tanC.$

5. (a) Prove that $tan3A=\frac{3tanA-tan^3A}{1-3tan^2A}$

   (b) Eliminate θ from the equations $x=cos\theta+sin\theta,\ y=tan\theta$

END