OCTOBER 2020
EBS 169J
TRIGONOMETRY
1 HOUR 30 MINUTES

Candidate's Index Number
FSCE/JHS/19/0128
Signature:

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B. Ed)
FIRST YEAR, END-OF-SECOND SEMESTER EXAMINATION, OCTOBER 2020

OCTOBER 27, 2020 **TRIGONOMETRY** **2:30 PM – 4:00 PM**

SECTION B
Answer only TWO questions from this section

1. (a) Express $\cos 3A$ in terms of $\cos A$ only.

   (b) The bearing of a point P from a point Q is (6km, 305°) and the bearing of a point R from P is (8km, 035°).

   i. Find the bearing of the point R from Q.
   ii. Hence, find the angle between the line PR and QR.

2. (a) i. Using a scale of 2 cm to 20° on the *x-axis* and 2 cm to 0.5 unit on the *y-axis*, draw the graph of $f: x \to 3\sin x + 2\cos x$ for $0° \le \theta \le 180°$ at the intervals of 20°.

   ii. Use the graph in *(i)* to find, correct to the nearest degree, the truth set of:

   α. $3\sin x + 2\cos x + 1 = 0$

   β. $6\sin x + 4\cos x - 2 = 0$

   (b) Solve the equation $\tan\theta = 2\sin\theta$, for values of θ from 0° to 360° inclusive.

3. (a) If $\sin A = \frac{3}{5}$ and $\cos B \frac{5}{13}$, find the values of $\sin(A+B)$ and $\cos(A+B)$ when

   i. A and B are both acute.
   ii. A is obtuse and B is acute.

   (b) In ΔPQR, $p = 25$mm, $q = 40$mm and $\angle R = 82°$. Find: i. r, ii. $\angle P$ and iii. $\angle Q$, to one decimal place.

4. (a) Given that $y = 3\sin(2x + \pi/2)$, find the amplitude, period and phase shift. Hence, sketch the graph for $-\pi \le x \le \pi$.

   (b) An arc AP of a circle, centre O, subtends an angle of θ at O. Find an expressions in terms of θ and the radius, r, for the length of the arc AP and the area of the sector OAP. (see the figure below)