

MONYETLA PROJECT SUMMER CAMP DEC 2020
MATHEMATICS
TRIGONOMETRY
GRADE 11
EXAM-TYPE QUESTION

QUESTION 5

5.1 If $\cos 23^\circ = p$, express, **without the use of a calculator**, the following in terms of p :

5.1.1 $\cos 203^\circ$ (2)

5.1.2 $\sin 293^\circ$ (3)

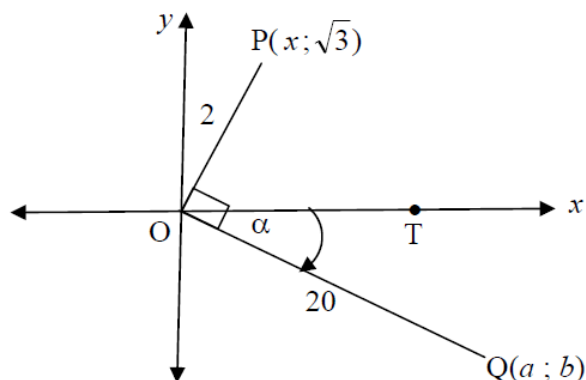
5.2 Simplify the following expression to a single trigonometric term:

$$\frac{\sin(360^\circ - x) \cdot \tan(-x)}{\cos(180^\circ + x) \cdot (\sin^2 A + \cos^2 A)}$$
 (6)

5.3 5.3.1 Prove the identity: $\frac{\cos x}{1 + \sin x} + \frac{1 + \sin x}{\cos x} = \frac{2}{\cos x}$ (5)

5.3.2 For which values of x in the interval $0^\circ \leq x \leq 360^\circ$ will the identity in QUESTION 5.3.1 be undefined? (2)

5.5 In the diagram below $P(x; \sqrt{3})$ is a point on the Cartesian plane such that $OP = 2$. $Q(a; b)$ is a point such that $\hat{TOQ} = \alpha$ and $OQ = 20$. $\hat{POQ} = 90^\circ$.



5.5.1 Calculate the value of x . (2)

5.5.2 Hence, calculate the size of α . (3)

5.5.3 Determine the coordinates of Q . (5)