Imię i nazwisko:
Klasa:
Grupa 1
Wynik:

Question 1 ***(1 pt)***
$\cos(495^\circ)$ is equal to:

A. $-\frac{\sqrt{3}}{2}$ B. $-\frac{\sqrt{2}}{2}$ C. $\frac{\sqrt{2}}{2}$ D. $\frac{\sqrt{3}}{2}$

Question 2 ***(1 pt)***
If $\sin\alpha = \frac{2}{5}$ and α is an obtuse angle, then:

A. $\cos\alpha = \frac{\sqrt{21}}{5}$ B. $\cos\alpha = -\frac{\sqrt{21}}{5}$ C. $\operatorname{tg}\alpha = \frac{\sqrt{21}}{5}$ D. $\operatorname{tg}\alpha = -\frac{\sqrt{21}}{5}$

Question 3 ***(1 pt)***
The value of $\operatorname{tg}35^\circ \times \operatorname{tg}40^\circ \times \operatorname{tg}45^\circ \times \operatorname{tg}50^\circ \times \operatorname{tg}55^\circ \times \operatorname{tg}60^\circ$ is

A. 0 B. $\frac{\sqrt{3}}{3}$ C. 1 D. $\sqrt{3}$

Question 4 ***(1 pt)***
If the value of $\operatorname{tg}\alpha + \operatorname{ctg}\alpha = 5$, then $\operatorname{tg}^2\alpha + \operatorname{ctg}^2\alpha$ is equal to:

A. 3 B. 23 C. 25 D. 27

Question 5 ***(1 pt)***
In a triangle ABC, $|AB| = 10$, $|AC| = 7$ and $\cos\angle BAC = \frac{1}{5}$. The length of BC is equal to:

A. 11 B. $\sqrt{149}$ C. 13 D. $\sqrt{177}$

Question 6 ***(3 pts)***

Prove that if α is an acute angle, then:

$$\sqrt{\frac{1+\sin\alpha}{1-\sin\alpha}}+\sqrt{\frac{1-\sin\alpha}{1+\sin\alpha}}=\frac{2}{\cos\alpha}$$

Question 7 ***(3 pts)***

Given that α is acute and $\sin\alpha-\cos\alpha=\frac{3}{5}$, find the value of $\sin^3\alpha-\cos^3\alpha$.

Question 8 ***(3 pts)***

Prove that in an acute triangle with heights h_a and h_b and the angle γ, the area is given by the formula:

$$P = \frac{h_a \times h_b}{2 \sin \gamma}$$

Question 9 ***(3 pts)***

Given a triangle ABC with side-lengths: $|AB| = 5$,$|AC| = 7$ and $|BC| = 8$, find the size of the angle $\angle ABC$.

Question 10 ***(3 pts)***

In an obtuse triangle ABC, $|AB| = 8$, $|AC| = 4\sqrt{6}$ and $\angle ACB = 45°$. Find the size of the other two angles of the triangle.