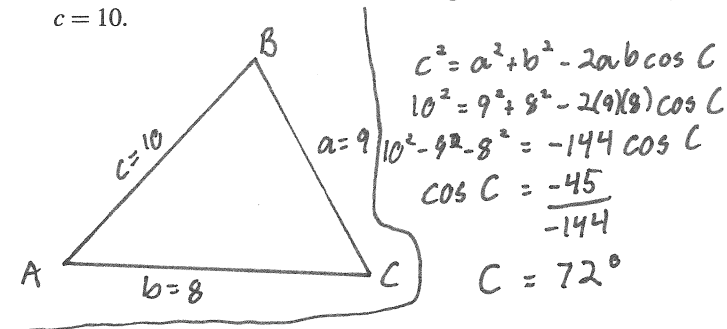


# Quiz 13

This quiz is graded out of <sup>5</sup>13 marks. No books, watches, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

**Question 1. (3 marks)** Solve the triangle ABC where  $a = 9, b = 8$  and  $c = 10$ .



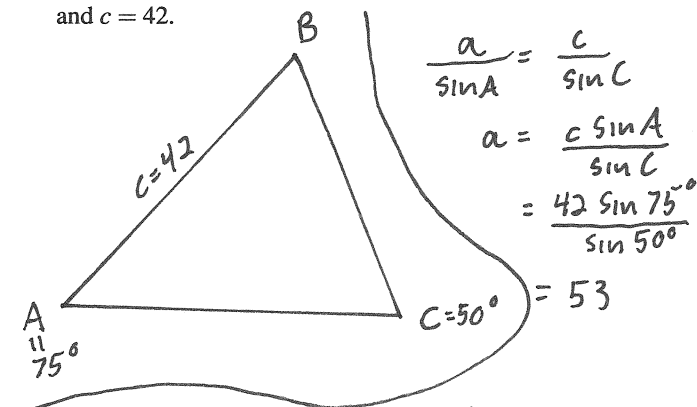
$$\frac{\sin B}{b} = \frac{\sin C}{c}$$

$$\sin B = \frac{b \sin C}{c} = \frac{8 \sin 72^\circ}{10}$$

$$B = 50^\circ$$

$$\begin{aligned} A + B + C &= 180^\circ \\ A &= 180^\circ - B - C \\ &= 180^\circ - 50^\circ - 72^\circ \\ &= 58^\circ \end{aligned}$$

**Question 2. (3 marks)** Solve the triangle ABC where  $A = 75^\circ, C = 50^\circ$ , and  $c = 42$ .



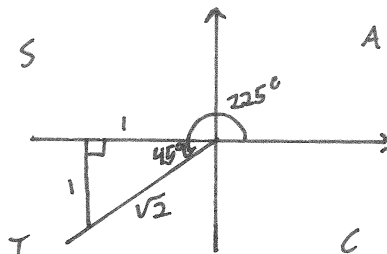
$$\begin{aligned} \frac{a}{\sin A} &= \frac{c}{\sin C} \\ a &= \frac{c \sin A}{\sin C} \\ &= \frac{42 \sin 75^\circ}{\sin 50^\circ} \end{aligned}$$

$$= 53$$

$$\begin{aligned} 180^\circ &= A + B + C \\ B &= 180^\circ - A - C \\ &= 180^\circ - 75^\circ - 50^\circ \\ &= 55^\circ \end{aligned}$$

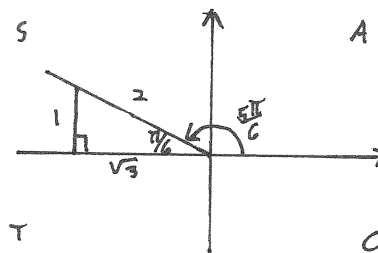
$$\begin{aligned} \frac{b}{\sin B} &= \frac{c}{\sin C} \\ b &= \frac{c \sin B}{\sin C} \\ &= \frac{42 \sin 55^\circ}{\sin 50^\circ} \\ &= 45 \end{aligned}$$

**Question 3. (3 marks)** Find the exact value of:  $\sin 225^\circ$ .



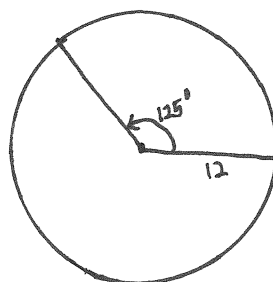
$$\sin 225^\circ = -\frac{\text{opp}}{\text{hyp}} = -\frac{1}{\sqrt{2}}$$

**Question 4. (3 marks)** Find the exact value of:  $\sec \frac{5\pi}{6}$ .



$$\sec \frac{5\pi}{6} = -\frac{\text{hyp}}{\text{adj}} = -\frac{2}{\sqrt{3}}$$

**Question 5. (3 marks)** Find the area of the sector of the circle with central angle  $\theta = 125^\circ$  and radius  $r = 12$ .



$$\begin{aligned} A &= \frac{1}{2} r^2 \theta \\ \theta &= 125 \frac{\pi}{180} \\ &= \frac{25\pi}{36} \\ A &= \frac{1}{2} 12^2 \frac{25\pi}{36} \\ &= 50\pi \end{aligned}$$