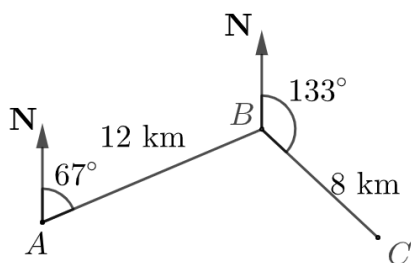


Question 1

The diagram shows the position of three towns, A , B , and C .
Find the bearing of C from A to the nearest degree.



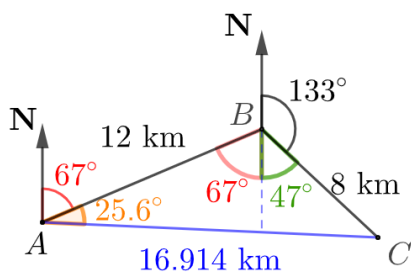
Question 2

$$f(x) = \frac{2x}{x+2} \text{ and } g(x) = x^6 - 2$$

Find $fg(x)$, giving your answer in the form $ax^n + b$
where a, b , and n are integers.

Question 1

The diagram shows the position of three towns, A , B , and C .
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$$\angle ABC = 67^\circ + 47^\circ = 114^\circ$$

Using the cosine rule, we find length $AC = 16.914$ km

Using the sine rule, we find $\angle CAB = 26^\circ$ to the nearest degree.

The bearing of C from A is therefore $67^\circ + 26^\circ = 093^\circ$

Question 2

$$f(x) = \frac{2x}{x+2} \text{ and } g(x) = x^6 - 2$$

Find $fg(x)$, giving your answer in the form $ax^n + b$
where a, b , and n are integers.

$$\begin{aligned} fg(x) &= \frac{2(x^6 - 2)}{(x^6 - 2) + 2} \\ &= \frac{2(x^6 - 2)}{x^6} \\ &= \frac{2x^6}{x^6} - \frac{4}{x^6} \\ &= 2 - 4x^{-6} \end{aligned}$$
