

Access to Science, Engineering and Agriculture:
Mathematics 1
MATH00030
Chapter 5 Exercises

1. Using the parity identities and the fact that trigonometric functions are periodic, calculate the following:

(a) $\sin\left(\frac{5\pi}{3}\right)$.

(b) $\cos\left(\frac{11\pi}{6}\right)$.

(c) $\tan\left(\frac{5\pi}{6}\right)$.

2. Using the co-function and parity identities, calculate the following:

(a) $\sin\left(\frac{3\pi}{4}\right)$.

(b) $\cos\left(\frac{2\pi}{3}\right)$.

(c) $\tan\left(\frac{5\pi}{6}\right)$.

3. For each of the following triangles, find the lengths of all the remaining sides and sizes of all the remaining angles.

(a)

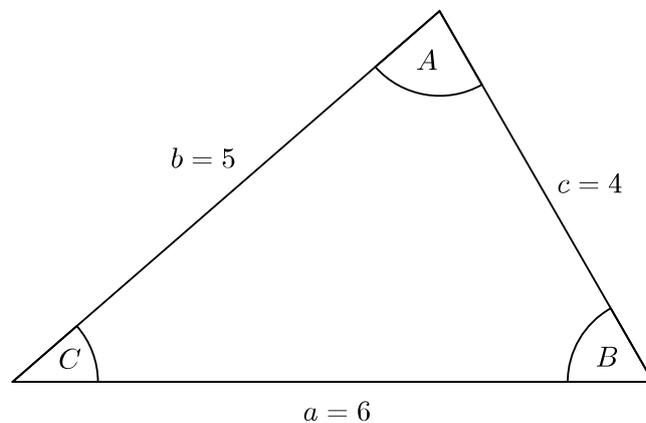


Figure 1: The triangle for Exercise 3(a).

(b)

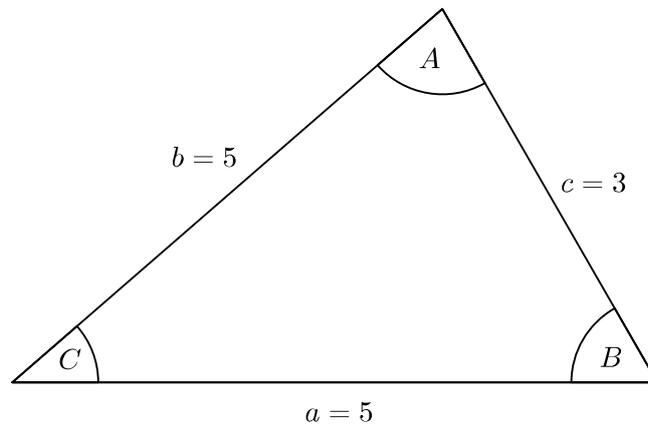


Figure 2: The triangle for Exercise 3(b).

(c)

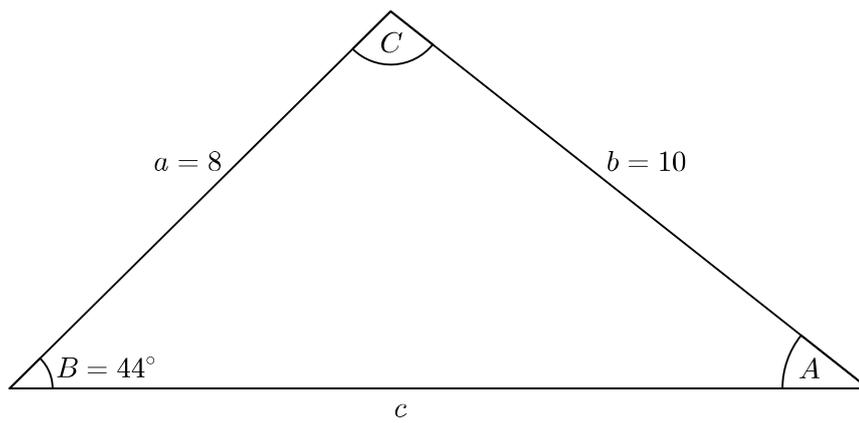


Figure 3: The triangle for Exercise 3(c).

(d)

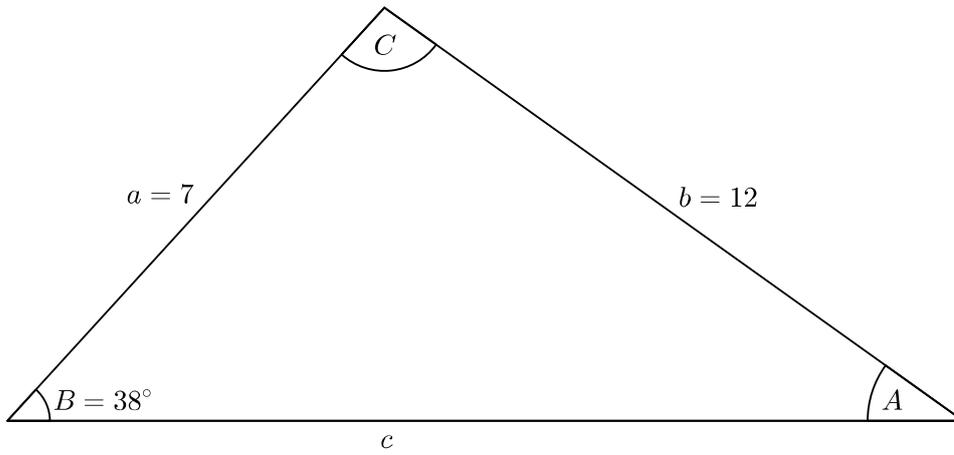


Figure 4: The triangle for Exercise 3(d).

(e)

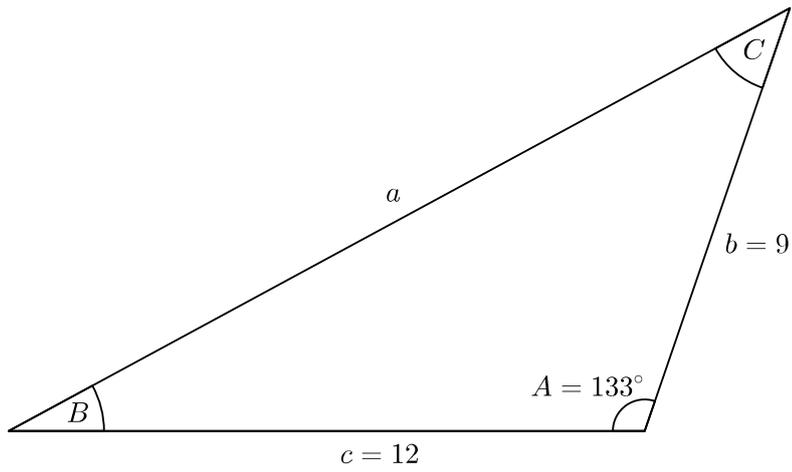


Figure 5: The triangle for Exercise 3(e).

(f)

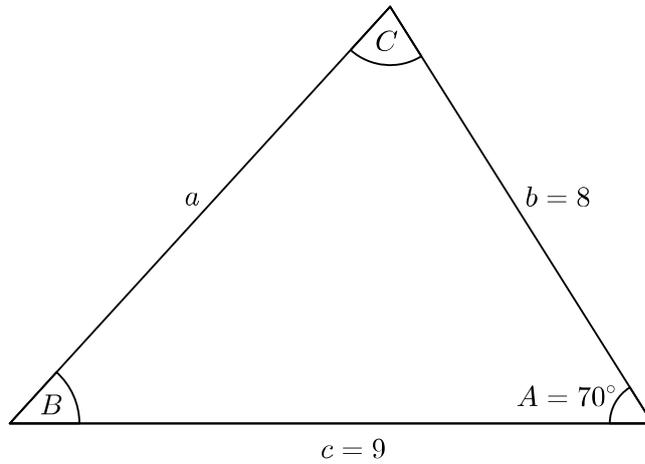


Figure 6: The triangle for Exercise 3(f).

4. Using the sum and difference formulae, calculate the following:

(a) $\sin\left(\frac{5\pi}{12}\right)$.

(b) $\sin\left(-\frac{\pi}{12}\right)$.

(c) $\cos\left(\frac{7\pi}{12}\right)$.

(d) $\tan\left(\frac{\pi}{12}\right)$.

5. Using the half angle formulae, calculate the following:

(a) $\sin\left(\frac{\pi}{12}\right)$.

(b) $\cos\left(\frac{\pi}{8}\right)$.

(c) $\tan\left(\frac{\pi}{8}\right)$.