

Practise, Apply, Solve 6.1, page 509

1. (a) 47° (b) does not exist
(c) 20° (d) 112°
2. (a) 12.4 cm (b) 12.1 or 11.7 cm
(c) 18.1 cm (d) 7.0 or 9.2 cm
3. (a) 92° (b) 55°
(c) 32° (d) 61°
4. (a) 25.5 cm (b) 35.9 cm
(c) 19.0 cm (d) 15.0 cm
5. (a) two solutions (b) one solution
(c) no solution (d) two solutions
6. (a) (i) (b) (i)
(ii) $b \sin A \approx 1.5250$ cm (ii) $b \sin A = 7.3$ cm,
(iii) no solution (iv) no solution (iii) one solution (iv) 12.6 cm
(c) (i) (d) (i)
(ii) $b \sin A \approx 5.3343$ mm (ii) $b \sin A \approx 16.6139$ cm
(iii) two solutions (iii) one solution
(iv) 12.5 mm, 2.8 mm (iv) 22.2 cm
7. (a) $m \approx 15.0$ cm, $\angle L \approx 46^\circ$, $\angle N \approx 29^\circ$
(b) $t \approx 13.9$ cm, $r \approx 15.7$ cm, $\angle R = 32^\circ$
(c) $\angle A \approx 98^\circ$, $\angle B \approx 30^\circ$, $\angle C \approx 52^\circ$
(d) $\angle X = 124^\circ$, $z \approx 12.9$ cm, $y \approx 8.1$ cm
(e) $b \approx 21.6$ cm, $c \approx 14.3$ cm, $\angle B = 105^\circ$
(f) $l \approx 17.2$ cm, $\angle M \approx 53^\circ$, $\angle N \approx 92^\circ$
(g) $q \approx 7.1$ cm, $r \approx 13.2$ cm, $\angle S = 92^\circ$
(h) $\angle D \approx 46^\circ$, $\angle E \approx 58^\circ$, $\angle F \approx 76^\circ$
8. (a) $\angle B \approx 52^\circ$, $c \approx 11.1$, $\angle C \approx 60^\circ$
(b) no solution
(c) $(\angle I, f, \angle F) \approx (50^\circ, 16.2 \text{ cm}, 95^\circ)$, $(130^\circ, 4.3 \text{ cm}, 15^\circ)$
(d) $\angle D \approx 129^\circ$, $d \approx 89.0$ cm, $\angle F \approx 6^\circ$
(e) $(\angle X, \angle Z, z) \approx (56^\circ, 86^\circ, 18.3 \text{ cm})$, $(124^\circ, 18^\circ, 5.6 \text{ cm})$
9. $(\angle E, \angle F, f) \approx (50^\circ, 89^\circ, 18.3 \text{ cm})$, $(130^\circ, 9^\circ, 5.7 \text{ cm})$
11. 4139 m
12. Yes, consider $\triangle ABC$, with $a = 430$ m, $\angle A = 35^\circ$ and $b = 110$ m.
Then, $\angle B \approx 8.4^\circ$, $\angle C \approx 136.6^\circ$, and $c \approx 515.1$ m.
13. (a) 12.98 m (b) 25.87 m (c) 11.86 m
14. 11.7 cm
15. 4.92 cm
16. (a) $l < m \sin L$ (b) $l = m \sin L$ (c) $m \sin L < l < m$
17. (a) 16.2 m, 17.5 m (b) 11.3 m
18. 32 km
19. 24.6 m
20. 28.5 km
21. 57.6 cm
23. 35.33 cm
24. 5.5 cm
25. 59.5 cm^2