# 25 Triangle Trigonometry

**Concepts:**

- Trigonometry for Acute and Obtuse Angles
  - The Law of Cosines
  - The Law of Sines
- Area of a Triangle
- Heron's Formula

**(Sections 8.3 & 8.4)**

1. Solve each traingle.

   (a) Triangle $ABC$ when $a = 4, B = 59.2°$, and $C = 90°$.

   (b) Triangle $ABC$ when $b = 4, a = 5.5$, and $C = 90°$.

   (c) Triangle $ABC$ when $c = 10.3, a = 4.5$, and $C = 90°$.

2. Solve each triangle.

   (a) Triangle $ABC$ when $a = 20.1, b = 15.6$, and $C = 41°$.

   (b) Triangle $ABC$ when $A = 37°$, $B = 18.6°$, and $a = 3$.

3. Solve the triangle $\Delta ABC$.

   (a) $B = 40°,\ a = 12,\ c = 20$

   (b) $A = 118.2°,\ b = 16.5, c = 10.7$

   (c) $C = 52.5°,\ a = 6.5, b = 9$

   (d) $a = 8, b = 5, c = 10$

   (e) $a = 6.8,\ b = 12.4,\ c = 15.1$

4. Find the angles of the triangle whose vertices are $(-3, 4)$, $(5, -2)$, $(1, -4)$.

5. Solve the triangle $\Delta ABC$.

   (a) $B = 33^\circ,\ C = 46^\circ,\ b = 4$

   (b) $A = 67^\circ,\ C = 28^\circ, a = 9$

   (c) $b = 30,\ c = 50, C = 60^\circ$

   (d) $a = 30, b = 40, A = 30^\circ$

   (e) $a = 6.8,\ b = 12.4,\ c = 15.1$

6. Find the area of the triangle $\Delta ABC$.

   (a) $b = 10,\ c = 14,\ A = 36^\circ$

   (b) $a = 9,\ b = 13, C = 75^\circ$

   (c) $a = 4,\ c = 12, C = 14$

   (d) $a = 17, b = 27, c = 40$

   (e) $a = b = c$

7. A solider with a range finder determines that at certain time an enemy truck is 300 feet from him. One second later the truck is 350 feet away from him. If the solider had to move his range finder through an angle of $12.83^\circ$ to make the second measurement, how fast is the truck going?