

1. Find the area of a triangle with side lengths of 2 m, 4 m, and 5 m.

2. Find the area of the triangle if $a = 6$, $b = 7$, $m\angle C = 55^\circ$.

3. Given $m\angle A = 120^\circ$, $a = 20$, $b = 40$

Draw and label a triangle (or triangles, if multiple solutions) and **find** $m\angle B$.

4. Given $m\angle B = 48^\circ$, $c = 26$, $b = 22$

Draw and label a triangle (or triangles, if multiple solutions) and **find** $m\angle C$.

5. Given $m\angle A = 52^\circ$, $a = 10$, $b = 8$

Draw and label a triangle (or triangles, if multiple solutions) and **find** $m\angle B$.

6. Given $a = 30$, $b = 40$, $c = 20$

Draw and label a triangle (or triangles, if multiple solutions) and **find** $m\angle B$.

7. Evaluate and write in trigonometric and standard form (standard answers in exact form if possible):

$$\left[4 \left(\cos \frac{2\pi}{9} + i \sin \frac{2\pi}{9} \right) \right]^3$$

8. Perform the indicated operation and express solutions in *trigonometric form*.

(a) $[3(\cos 15^\circ + i \sin 15^\circ)][9(\cos 42^\circ + i \sin 42^\circ)]$

(b) $\frac{21(\cos 60^\circ + i \sin 60^\circ)}{3(\cos 28^\circ + i \sin 28^\circ)}$

9. Sketch and write the following in **trigonometric form** (*answer must be in radian form...no calculator*):

$$-3 - 3i$$

10. Find the cube roots of: $8i$

Leave answer in trigonometric form using degrees.

11. A lighthouse at the edge of the ocean spots two boats. The angles of depression to the two boats are 20° and 30° . If the boats are 100 feet apart, *how tall is the lighthouse?*

12. A plane flies a path between 3 islands forming a triangle. Here is the path that the plane takes:

- From island A, the plane flies directly south 22 km to island B.
- From island B, the plane flies 15.04 km at a bearing of $N51^\circ E$ to island C.
- From island C, the plane flies 17.14 km directly back to island A.

What is the navigational bearing of the last leg of the trip, from island C back to island A?