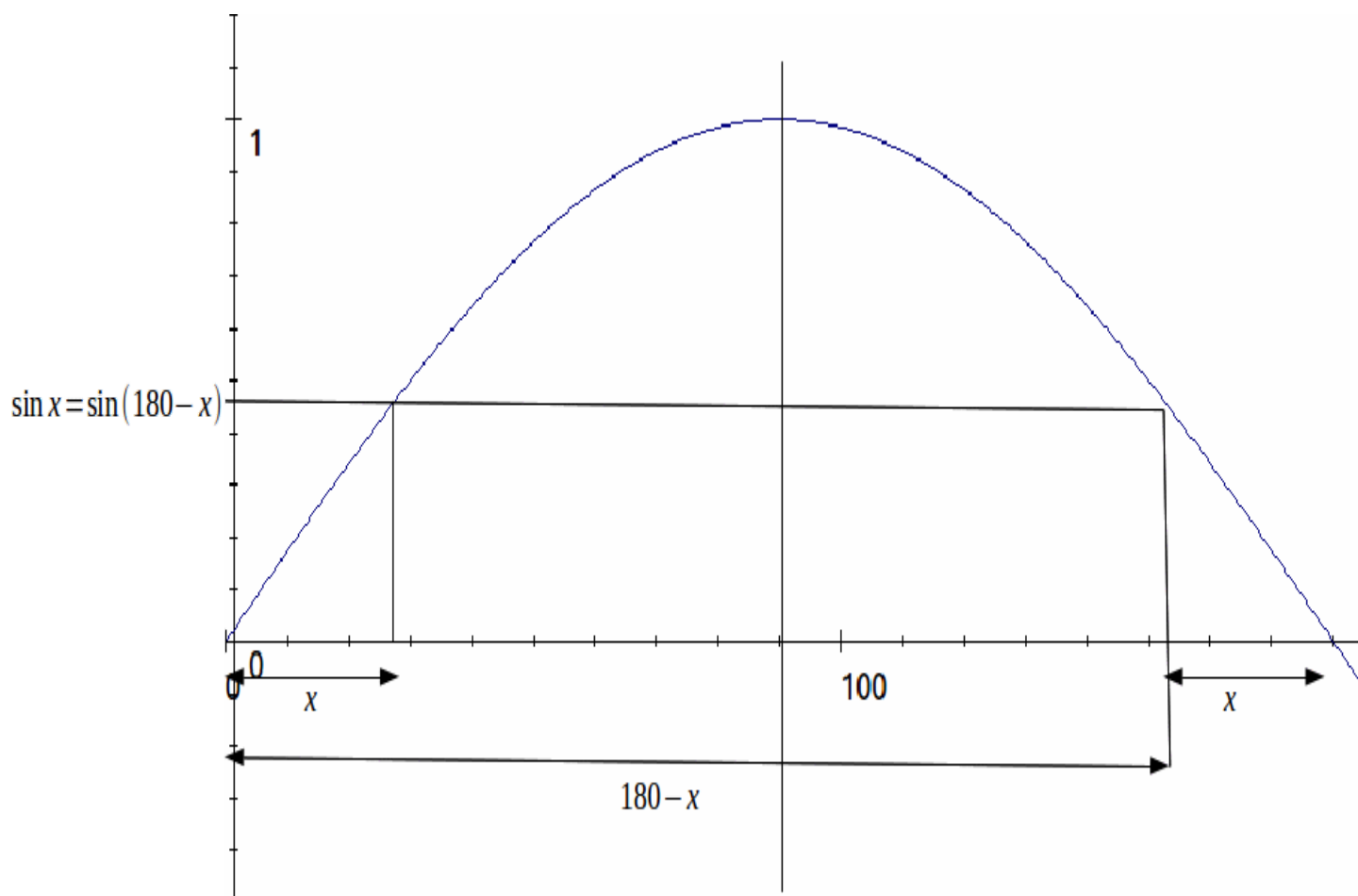


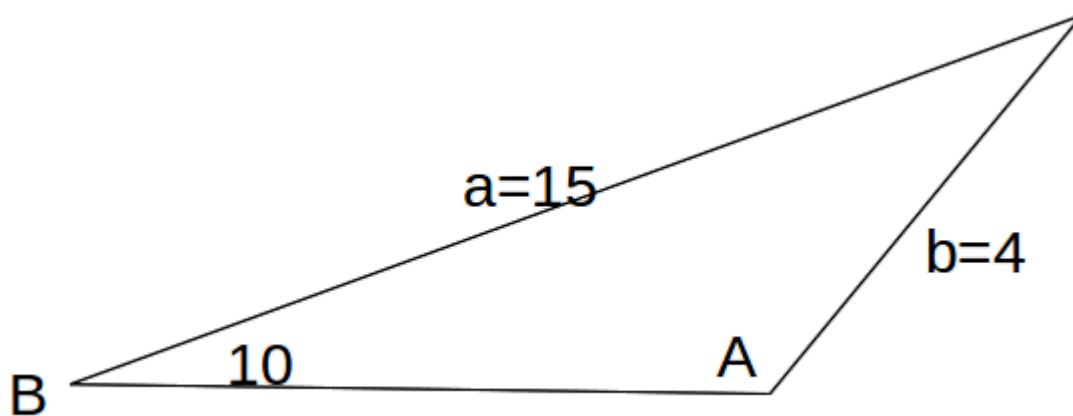
The Ambiguous Case

The ambiguous case arises when using the Sine Rule to find an angle in a triangle. It occurs because the Sin function is symmetric about 90° , so that $\sin x = \sin(180 - x)$.



When we solve for $\sin x = 0.9$, there is an acute solution, $x = \sin^{-1}(0.9) = 64.16^\circ$ and an obtuse solution, $x = 180^\circ - \sin^{-1}(0.9) = 180^\circ - 64.16^\circ = 115.84^\circ$.

Example: Find the angle A in the triangle below.



The Sine Rule states $\frac{\sin A}{a} = \frac{\sin B}{b}$.

$$\frac{\sin A}{15} = \frac{\sin 10}{4} \rightarrow \sin A = 15 * \frac{\sin 10}{4} = 0.6512$$

Then $A = \sin^{-1}(0.6512) = 40.63^\circ$.

This is obviously wrong since A is obtuse.

In fact $A = 180 - 40.63 = 139.37^\circ$.