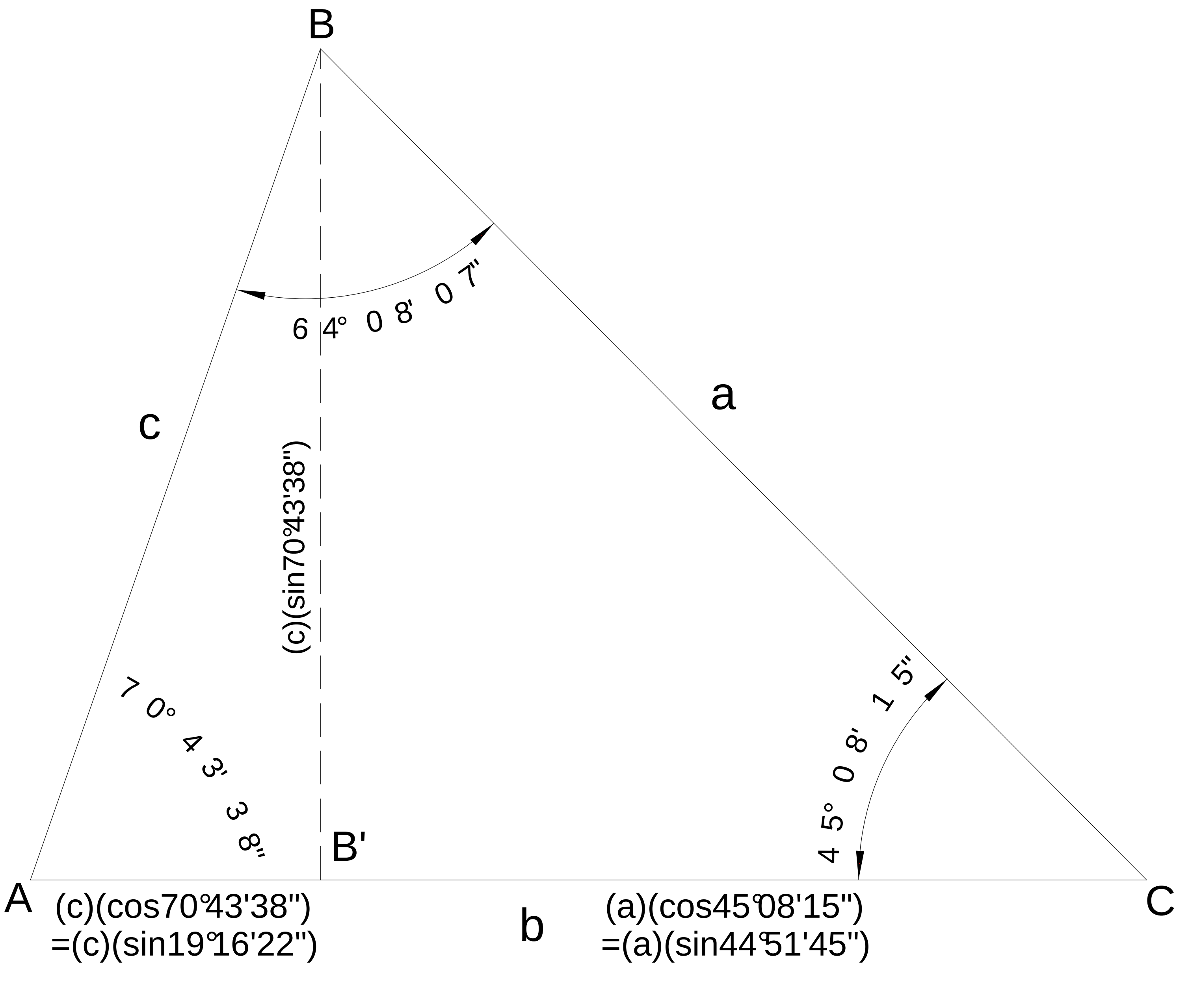
B
64° 08' 07"
a
c
(c)(sin70°43'38")
70° 43' 38"
45° 08' 15"
B'
A
C
b
(c)(cos70°43'38")
=(c)(sin19°16'22")
(a)(cos45°08'15")
=(a)(sin44°51'45")

3-ANG-AREA-ANS

Construct the altitude B-B'.
A-B' is equal to $c \cdot \cos 70°43'38''$, which is also equal to $c \cdot \sin 19°16'22''$.
B'-C is equal to $a \cdot \cos 45°08'15''$, which is also equal to $a \cdot \sin 44°51'45''$.
The area of A-B-C is the sum of the two right triangles, to wit:

$$\text{Area} = \frac{1}{2} \cdot c \cdot \sin 70°43'38'' \cdot c \cdot \sin 19°16'22'' + \frac{1}{2} \cdot c \cdot \sin 70°43'38'' \cdot a \cdot \sin 44°51'45''$$

$$= \frac{1}{2} \cdot c \cdot \sin 70°43'38'' \cdot (c \cdot \sin 19°16'22'' + a \cdot \sin 44°51'45'')$$

but $c \cdot \sin 19°16'22'' + a \cdot \sin 44°51'45'' = b$, so area = $\frac{1}{2} \cdot b \cdot c \cdot \sin 70°43'38''$ . . . [1]

Now do the same for the other altitudes and you will get the area =
$\frac{1}{2} \cdot a \cdot c \cdot \sin 64°08'07''$. . .[2] and $\frac{1}{2} \cdot a \cdot b \cdot \sin 45°08'15''$. . .[3], yielding three equations in three unknowns.

Equating [1] and [3]: $\frac{1}{2} \cdot b \cdot c \cdot \sin 70°43'38'' = \frac{1}{2} \cdot a \cdot b \cdot \sin 45°08'15''$, then dividing by b/2:

$c \cdot \sin 70°43'38'' = a \cdot \sin 45°08'15''$ so $c = \frac{a \cdot \sin 45°08'15''}{\sin 70°43'38''}$; substituting in [2]:

$217.946 = \frac{1}{2} \cdot a \cdot \frac{a \cdot \sin 45°08'15''}{\sin 70°43'38''} \cdot \sin 64°08'07''$ yields a = 803.20, which substituted into [2] yields c = 603.11.

The Law of Sines can be used to solve for b = 765.65

Alternatively: also from the Law of Sines, substitute $b = \frac{c \cdot \sin B}{\sin C}$ into [1] for

$$\frac{1}{2} \cdot \frac{c \cdot \sin B}{\sin C} \cdot c \cdot \sin A = \frac{c^2 \cdot \sin B \cdot \sin A}{2 \cdot \sin C} \text{ or } \frac{c^2 \cdot \sin 64°08'07'' \cdot \sin 70°43'38''}{2 \cdot \sin 45°08'15''} = 217{,}946$$

From which c = 603.11

Also area = $\frac{b^2 \cdot \sin A \cdot \sin C}{2 \cdot \sin B}$ from which b = 765.65, and area = $\frac{a^2 \cdot \sin B \cdot \sin C}{2 \cdot \sin A}$ from

Which a = 803.20