(c) Determine the distance from the yacht to the sailboat, to the nearest tenth of a kilometer. If there are two answers, determine both. If there are no answers, explain why.

Using Diagram #1:

$\frac{8}{\sin 48^\circ} = \frac{10}{\sin B}$

$8\sin B = 10\sin 48^\circ$

$\sin B = \frac{10\sin 48^\circ}{8}$

$B \doteq 68^\circ$

$\therefore \angle L = 64^\circ$

$\frac{8}{\sin 48^\circ} = \frac{\ell}{\sin 64^\circ}$

$\ell \sin 48^\circ = 8\sin 64^\circ$

$\ell \doteq 9.7\text{ km}$

Using Diagram #2:

$\angle B = 180^\circ - 68^\circ = 112^\circ$

$\therefore \angle L = 20^\circ$

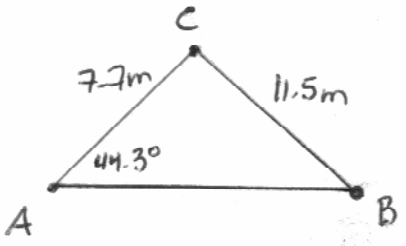
$\frac{8}{\sin 48^\circ} = \frac{\ell}{\sin 20^\circ}$

$\ell \sin 48^\circ = 8\sin 20^\circ$

$\ell \doteq 3.7\text{ km}$

$\therefore$ The yacht is 3.7 km or 9.7 km away from the sailboat

3. Solve Triangle ΔABC if $\angle A = 44.3^\circ$, a = 11.5 m, and b = 7.7 m. Round the side length to the nearest tenth of a metre and the angles to the nearest tenth of a degree, if necessary.



$\frac{11.5}{\sin 44.3^\circ} = \frac{7.7}{\sin B}$

$11.5\sin B = 7.7\sin 44.3^\circ$

$B = 27.9^\circ$

$\frac{11.5}{\sin 44.3^\circ} = \frac{c}{\sin 107.8^\circ}$

$c\sin 44.3^\circ = 11.5\sin 107.8^\circ$

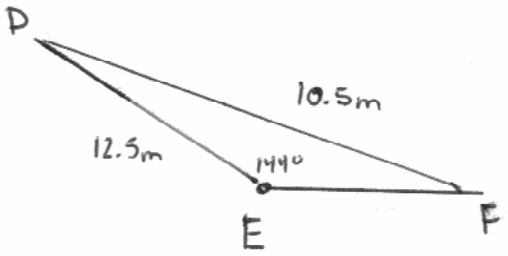
$c = 15.7\text{m}$

$\angle C = 180^\circ - (44.3^\circ + 27.9^\circ)$

$= 107.8^\circ$

$\therefore c = 15.7\text{m}, \angle B = 27.9^\circ, \angle C = 107.8^\circ$

4. Determine the number of possible triangles that can be drawn with the given measures. In ΔDEF, $\angle E = 144^\circ$, e = 10.5 m, f = 12.5 m



$\frac{10.5}{\sin 144^\circ} = \frac{12.5}{\sin F}$

$12.5\sin 144^\circ = 10.5\sin F$

$44^\circ = F$

$\angle E + \angle F = 188^\circ$

$188^\circ > 180^\circ$

$\therefore$ No triangles can be drawn with the given measurements.