Math 115 Section 7.1 Worksheet

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Instructions: Determine all solutions for the remaining angle measurements and triangle side lengths for each triagnle. If no solution exists, specify this. Show all work.

Recall: Suppose we are given an angle A, followed by two sides b, a (the Pain in the ASS case). We have the following subcases:

- **Case:** $A < 90$ degrees.
  - **Case:** $a < b$.
    - **Subcase:** If $a < b\sin(A)$, there are no solutions (no such triangle exists).
    - **Subcase:** If $a = b\sin(A)$, then only one triangle exists.
    - **Subcase:** If $a > b\sin(A)$, then there are two solutions.
  - **Case:** $a \geq b$. There is only one solution.
- **Case:** $A \geq 90$ degrees.
  - **Case:** If $a \leq b$, there are no solutions.
  - **Case:** If $a > b$, there is one solution.

Problems.

(a) $a = 6, b = 8,\ A = 150$ degrees.

(b) $a = 26, b = 29, A = 58$ degrees.

(c) $a = 4, b = 8, A = 30$ degrees.

(d) $a = 25, c = 24, C = 70$ degrees.

(e) $c = 20,\ A = 40$ degrees, $B = 60$ degrees.

(f) $a = 14, b = 12, B = 90$ degrees.

(g) $b = 19, c = 30,\ B = 36$ degrees.

(h) $a = 17.2, c = 12.2, A = 107.2$ degrees

(i) $a = 5, b = 20, A = 76$ degrees.

(j) $a = 10, c = 16, C = 47$ degrees.

(k) $b = 42, c = 60, B = 40$ degrees.

(l) $a = 32, b = 40, A = 125.3$ degrees.