Test Sections 6.1 – 6.2 Precalculus Name _____

Do not write on this paper! Do all work on your own paper.

I. Basic Theorems and Proofs

1. Write out all three forms of the Law of Cosines for ΔRAP.

2. Write out the Law of Sines for ΔMEG.

3. Write out the formula for determining the area of a triangle if you are given:
   A. the lengths of the three sides c, a, and t of ΔCAT.
   B. the lengths of two sides q and e and the measure of $\angle D$ of ΔQED.
   C. the lengths of the base b and the altitude h of ΔBAT.

4. Prove the Law of Sines.

II. Multiple Choice

5. Given ΔABC with $m\angle B = 34^\circ$, $m\angle A = 90^\circ$, and c =14.7 cm. Then a =
   A) 17.7 cm B) 9.92 cm C) 16.6 cm D) 8.81 E) 22.14 cm

6. In ΔCAM, $m\angle M = 137^\circ$, a = 31.6 ft, and c = 42.8 ft. Then m =
   A) 21.8 ft B) 38.8 ft C) 65.7 ft D) 69.3 ft E) 72.1 ft

7. In ΔMEG, m = 28 cm, e = 17 cm, and g = 13 cm. The measure of the ***smallest*** angle is
   A) 15.51° B) 18.27° C) 24.2° D) 137.5°
   E) Not possible (no such triangle)

8. . In ΔPEG, p = 12 cm, e = 20 cm, and g = 32 cm. Then $m\angle G =$
   A) 2° B) 15.12° C) 18.27° D) 38.12°
   E) Not possible (no such triangle)

III. Free Response (SHOW ALL WORK!!)

9. Determine the area of ΔMRP if $m = 8$ in, $p = 6$ in, and $m\angle R = 34^\circ$.

10. Determine the area of ΔPAM if $m = 12$ in, $p = 6$ in, and $a = 9$ in.

11. In ΔMAY, you are given the measures of the three sides of the triangle. Explain thoroughly how you would determine the measures of the three angles of the triangle.

12. In ΔXYZ, $m\angle X = 13^\circ$, $x = 12$ cm, and $y = 15$ cm. Determine the length of side z.

13. In ΔABC, $m\angle A = 31^\circ$, $a = 3$ cm, and $b = 10$ cm. Determine the length of side c.

14. In ΔABC, $m\angle B = 38^\circ$, $a = 10$ cm, and $m\angle A = 139^\circ$. Solve for the missing three parts of the triangle.

15. The angles of elevation to an airplane from two points A and B on level ground are 52° and 67°, respectively. The points A and B are 4 miles apart, and the airplane is east of both points in the same vertical plane. Determine the altitude of the plane.