Test 3 MAT 1015 Winter 2009 Name________________________

Simplify all answers and show your work!

1) Corresponding angles in a similar triangle are ________________________________.

2) The Pythagorean Theorem may only be used with ________________________ triangles.

3) Fill in the following ratios using the words “opposite”, adjacent”, and “hypotenuse”:
   a) cot A = ___________________  b) sec A = ___________________  c) csc A = ___________________

4) A tree 66 feet tall casts a shadow 132 feet long. Brad is 5 1/2 feet tall. How long is Brad's shadow?

5) If \( \triangle ABE \sim \triangle DCE \) where \( AB = 5.1 \), \( AE = 6.5 \), \( BE = 4.8 \), and \( DC = 6.5 \), find the following:
   a) \( CE = \) __________  
   b) \( ED = \) __________  

   c) \( \angle BAE \equiv \) __________  
   d) \( \angle AEB \equiv \) __________  
   e) \( \angle ABE \equiv \) __________

Use the right triangle below to answer questions 6 – 11.

6) If \( b = 6 \) and \( c = 7 \), find \( \sin B \).  
7) If \( a = 5 \) and \( c = 13 \), find \( b \).

8) If \( a = 8 \) and \( c = 7 \), find \( \cos A \).  
9) If \( m\angle B = 32^\circ \) and \( a = 9 \), find \( b \).

10) If \( m\angle A = 49^\circ \) and \( c = 11.3 \), find \( a \).

11) If \( a = 8.7 \) and \( b = 9.4 \),
   a) find \( m\angle A \).
   b) find \( m\angle B \).

Find the values of the following.

12) \( \sin 32.9^\circ \)  
13) \( \cos 12^\circ \)  
14) \( \tan 88^\circ \)  
15) \( \sec 76.1^\circ \)  
16) \( \csc 20^\circ \)

Solve for \( x \):

17) \( \cos 25^\circ = \frac{3}{x} \)

18) \( \tan 42^\circ = \frac{x}{1.3} \)

19) \( \cot 80^\circ = \frac{12.9}{x} \)
20) Given the triangle to the right, find the following.

a) AC = _______   b) sin B    c) cos B    d) tan B    e) cot B    f) csc B

21) sin A = 0.3972
22) sec A = 6.7

Find the acute angle measure that satisfies the following. Round to the nearest tenth of a degree.

23) Convert to decimal degree form:
168° 24’ 49”

24) Convert to degrees, minutes, and seconds, Round to the nearest second: 52.648°

25) Find the complement of 32° 29’ 48”.

26) Find the supplement of 32° 29’ 48”.

27) According to the American National Standards Institute (ANSI), the angle of elevation that provides the best slip resistance for ladders is 75°. If a 10-foot ladder is resting against a wall at this angle, how far up the wall does the ladder reach?

28) Two ships leave port at same time. Ship A is heading due north and Ship B is heading due east. Twelve hours later they are 250 miles apart. If Ship A had traveled 120 miles from the port, how many miles had Ship B traveled?