Precalculus. Test #3. Fall 2013 Name_____
Sections 1.1-4.5-6.4. Class time of day, section, or instructor_____

On "algebraic" problems, CORRECT ANSWERS WITH LITTLE OR NO SUPPORTING WORK WILL RECEIVE LITTLE OR NO CREDIT. Include three or more correct significant digits when giving numerical answers.

#	Points	Score
1	15	
2	5	
3	8	
4	10, 6 = 16	
5	10	
6	3	
7	8	
8	8	
9	5	
10	12	
11	10	
total	100	

1. Short answer. [No work need be shown.]
a) Solve: $\log x = 2.3$

b) Here is a log statement in base b: $\log_b c = d$.
rewrite it in "exponential form".

c) Which grows faster, $2^{t/3}$ or $2^{t/4}$?

d) The waves of an earthquake have amplitude 10 meters.
What is the Richter scale value of the earthquake?

e) Give the end-behavior model of $\dfrac{x^2 - 5}{2x + 1}$

2. Rewrite the interval "$4.7 < x < 5.1$" in the form "$|x - c| < d$."

3. Solve $\dfrac{2}{x - 4} > 1$

4. Solve algebraically for t and show work

a) $(1/2)^{t/3} = .95(1/2)^{t/4}$

b) Use properties of logs to rewrite this as an equivalent expression without logs of powers, products, or quotients: $\log\left(\frac{x^3(1-x)^4}{(1+x)^7}\right) =$

5. After 25 minutes the amount of a radioactive substance undergoing exponential decay is 1% of the original amount. What is its half-life?

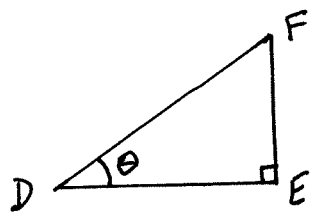
Trigonometry: Set your calculator to DEGREE mode.

Law of Cosines: $c^2 = a^2 + b^2 - 2ab \cos C$. Law of Sines: $(\sin A)/a = (\sin B)/b$.

6. When solving triangles, which is the most interesting and dangerous geometric case?

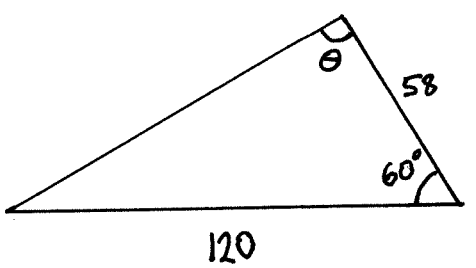
7. The figure is a right triangle [Show some work].

a) If DE = 12 and EF = 9, find θ



b) If θ = 37° and DE = 45, find DF.

8. In the figure the sides are 120 and 58, as labeled, and the given angle is 60 degrees. Find the angle θ [Show some work.]



9. Find the area of the above triangle. [Show some work.]

10. [See the picture] From point A to point B is 4.7 miles N 65° W. From point A to point C is 6.5 miles N 35°E. How far, and what bearing, is it from point B to point C?

As you go along, on the figure **fill in values for all the parts you discover**. Also, label your steps (1), (2) etc., so we can follow them in order. If your work is not easy to follow and you make an error, do not expect us to try to figure out what you did after the error (in order to more award partial credit).

Answer these two: How far?

What bearing?

C

B

A

11. [See the picture] A triangle has a 120° angle with opposite side 400. One adjacent side is twice as long as the other. How long is the shorter adjacent side? [Show work, of course.]