Math 190 Test 4
December 11, 2014

Name: _____

Note that both sides of each page may have printed material.

Instructions:

1. Read the instructions.

2. Scientific calculators are allowed for this exam—they're pretty much required.

3. Don't panic! I repeat, do NOT panic!

4. Complete all problems. In this exam, each problem is worth 10 points.

5. Show ALL your work to receive full credit. You will get 0 credit for simply writing down the answers. Make sure your answers are fully simplified.

6. Write neatly so that I am able to follow your sequence of steps and box your answers.

7. Read through the exam and complete the problems that are easy (for you) first!

8. No scrap paper, notes or other outside aids allowed—including divine intervention, telepathy, knowledge osmosis, the smart kid that may be sitting beside you or that friend you might be thinking of texting. In fact, **cell phones should be out of sight!**

9. Use the correct notation and write what you mean! x^2 and $x2$ are not the same thing, for example, and I will grade accordingly.

10. Follow the instructions for each problem carefully! If it asks for 1 decimal place, it means 1 decimal place!

11. Other than that, have fun and good luck!

Remember: *Do not go gentle into that good night. Rage, rage against the dying of the light.*

1. Given $f(x) = 1 + x - 2x^2$, find and simplify $\frac{f(x+h) - f(x)}{h}$.

2. Given that $f(x) = 4 - 4x + x^2$, find and simplify:
   (a) (2 points) $f(-2)$

   (b) (8 points) $f(2 - a) - f(3a)$

3. Let $h(x) = 2 - x^3$ and $g(x) = \sqrt[3]{1 - x}$. Find and simplify $h(g(x))$ and $g(h(x))$ (5 points each).

4. Find (to the nearest tenth of a degree) the largest angle of a triangle whose sides measure 4, 6, and 7.

5. Given that θ is an acute angle and $\sec\theta = \frac{4}{3}$, find the exact value of $\cot\theta$.

6. In triangle ABC, angle C measures $85°$, the length of side AB is 14, and the length of side AC is 5. Find angle A to the nearest tenth of a degree.

7. In triangle PQR, angle P measures $30°$, side PR measures 9 meters, while side PQ measures 13 meters. Find the length of side QR, correct to two decimal places.

8. In triangle ABC, angle A measures $32°$, angle B measures $98°$, and the length of AB is 12 units. Find the length of AC, correct to two decimal places.

9. ABC is a triangle with $C = 90°$. The length of AB is 17 and the length of AC is 15. Find the length of BC.

10. In the triangle above (problem 9), find the remaining angles A and B (label them!). (5 points each)