MATH ANALYSIS I HONORS

REVIEW #1
Chapters 1 and 2

1. Find the equation of the line parallel to $5x - 2y = 6$ with a y-intercept of 3.

2. Find the point of intersection between the lines $2x - 2y = -6$ and $5x + y = 21$.

3. Find the coordinates of the vertex of the parabola $y = 2x^2 + 6x - 15$.

4. Find the equation of the straight line containing the points $(4, -7)$ and $(-5, 2)$.

5. The imaginary number $i^{30} = ?$

6. Simplify $\sqrt{-18}$.

7. Find the product of the complex numbers $(2 - i)$ and $(3 + 2i)$.

8. Simplify $\dfrac{5 + 2i}{1 + i}$.

9. If $f(x) = x^2 - 3x + 2$ is a parabola, find the value of x where $f(x)$ is at its minimum.

10. Find an equation for the following function:

MATH ANAYSIS I HONORS

REVIEW #2
Chapters 2 & 3

1. Find a possible equation for the quartic function with roots of 0,3, and a double root at – 4.

2. How many real roots does the equation $x^3 + 4x$ have?

3. Find a possible equation for the cubic function with roots of 5, 3i, and -3i.

4. Given the function $f(x) = x^3 – 5x^2 + Kx + 3$, find K if $f(3) = 0$.

5. Find the solution set to the inequality $|2x-1| \leq 4$.

6. Find the solution set to the inequality $|x+5| \leq -2$.

7. Find the solution set to the inequality $5 < |3x+7|$.

8. Find the solution set to the inequality $(X-2)(x+4) \geq 0$.

9. The solution set of $y + 3x > 9$ lies in which quadrants?
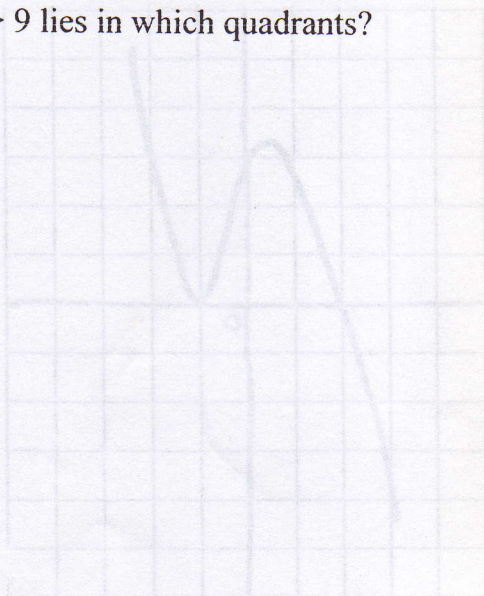
1.   What is the domain of the function $f(x) = 5x^2 + 1$

2.   What is the range of the function $f(x) = 5x^2 + 1$

3.   what is the definition of a function? What is true about the graphs of functions?

4.   If $f(x) = \frac{1}{2}x-6$, what is $f^{-1}(x)$

5.   if $f(x) = x^2 + x + 3$ and $g(x) = 2x-3$, what is $f(g(x))$, what is $g(f(x))$

6.   What types of functions have inverse functions? What is true about their graphs?

7.   If tan x = 7/3 and $0<x<\pi/2$, then sin x =

8.   Given the point (-1,3) find the cos θ

9.   Express the cos of 210° in radical form (refer to chart)

10.   Express 150°in radians

11.   Which angles have the same cosecant as 60°

12.   In which quadrants is secant negative?

13.   At what two angles, expressed in radians, is secant undefined? At what angles is cotangent undefined?

Review #4
Chapter 8

2.   Find the inclination of the line $2x + 4y = 5$

3.   Solve $5\sin\theta = -2$ for $0° \leq \theta \leq 360$

4.   Solve $2 - \tan\theta = 7$ for $0° \leq \theta \leq 2\pi$

5.   solve $2\sec\theta + 3 = 0$ for $0° \leq \theta \leq 360$

6.   What is the period and the amplitude of the periodic function
       $y = 2\sin \frac{1}{2} x$?

7.   Find an equation for the trigonometric function graphed below
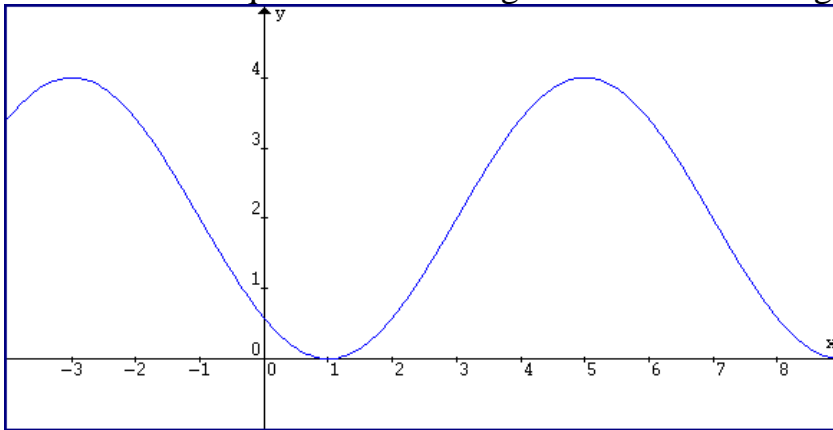
8. Graph the function $y - 2 = 3\cos 2(x-1)$

9.   Simplify the following $\tan A (\sin A - \csc A)$

10.   Simplify $\dfrac{(\sec X)(\csc X)}{\cot X}$

11. Solve for $0° \leq \theta \leq 360$ in the following $3\sin\theta = 2\cos\theta$

12. Solve for $0° \leq \theta \leq 360$ in the following $\tan^2\theta = 10 - 3\tan\theta$

MATH ANALYSIS I HONORS

REVIEW #5
Chapters 9 and 5

1. The sides of an isosceles triangle have lengths 10, 10, and 15. What are the measures of the angles?

2. At a distance of 125 m, the angle of elevation to the top of a tree is 15°. How tall is the tree?

3. How many different triangles ABC can be constructed using the following information?
   a. $\angle B = 65°$, $a = 6$, and $b = 5$.
   b. $\angle A = 25°$, $a = 5$, and $b = 9$.

4. Observers at points A and B sight an airplane between them at angles of elevation of 50° and 68°, respectively. If the observers are 50 km apart, how far is each observer from the plane?

5. A triangle has sides of length 6, 11, and 14. What are the measures of the angles?

6. Two ships start at the same point, but embark on courses that differ by 105°. If one ship travels at 100 mph and the other at 125 mph, how far apart are the ships after 2 ½ hours?

7. Evaluate the following:
   a. $\dfrac{2^7 4^{-2}}{\sqrt{2^{-4}}}$
   b. $(2^{-3} + 2^0)^{-2}$

8. Solve the following equations for x:
   a. $3^{5-x} = 9^{x+2}$
   b. $32^x = 4^{3x}$

9. Evaluate the following: 3 ln e

MATH ANALYSIS I HONORS

REVIEW #6
Chapters 5 and 6

1. Find the exact value of the following.
   a. $\log_2 32$
   b. $\log_2 0.25$
   c. $\log 0.1$

2. Express y as a function of x.
   a. $\log_2 y = 2 \log_2 (2x)$
   b. $\log_2 y = \log_2 x + 3 \log_2 3 - \log_2 10$

3. Express each of the following in terms of log M and log N.
   a. $\log \sqrt[3]{N^4 M^2}$
   b. $\log (M / N^3)$

4. Find the following logarithms.
   a. $\log_5 32$
   b. $\log_3 45$

5. Find the coordinates where the line $x - y = 2$ and the circle $x^2 + y^2 = 4$ intersect.

6. Find the coordinates of the vertices and the foci of the ellipse with the equation $9x^2 + 16y^2 = 144$.

7. Find an equation for the ellipse that has vertices at (0, 5) and (0, -5), and a minor axis with a total length of 8.

8. a. Find an equation for the hyperbola that satisfies the following.
      Center at (0, 0), vertex at (4, 0) and a focus at $(\sqrt{20}, 0)$
   b. Find the equations of the asymptotes.

9. Find the coordinates of the vertex and focus, and the equation of the directrix for the parabola $y = (1/8) x^2$.

10. Find the vertex of the parabola with a directrix of $x = 1$ and a focus of (7, 0).

Name_____pd_____

Math Analysis-

Final Exam Open ended Review-2014- **Scientific calculator Only**

1.   At a certain dock, the high tide occurs at 2:30 AM and the water is a depth of 20 feet, while low tide occurs at 9 AM and the water is a depth of 7 feet.

   a) Draw a graph to model the depth of water at the dock as a function of the time after midnight. Label each axis.

   b) Find a trigonometric equation to represent the given data. *(Let t = 0 represent 12:00 am midnight)*

   c) What is the depth of the water at 3:30 **P.M.?**

2. Classify the conic. Write in standard form and graph. Label all relevant parts of the conic.

   a) $9x^2 - 4y^2 + 36x + 8y - 4 = 0$ b) $3y^2 + 24x - 6y - 51 = 0$

3 Find- zero(s), domain, range, vertex, y-intercept for each
   a) $f(x) = x^3 + 6x^2 + 5x$ b) $f(x) = (x-2)^2 + 1$

.

4. Algebraically, find the points of intersection
      $y - x = 1$
      $y = x^2 - 2x - 3$