Problems PreCal 1508 Review, September 21, 2011
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1. Find the *slope-intercept form* of the equation of the line passing through the two points $(1, -2), (2, -3)$.

2. Find the *slope-intercept form* of the equation of a line passing through the point $(-9, 9)$ and perpendicular to line $y = 3x - 2$

3. Determine the implied domain for the following functions

   (a) $f(x) = x^3 + 2x + 9$
   (b) $h(x) = \frac{2x}{\sqrt{x-3}}$
   (c) $q(x) = \frac{9}{x^2-9}$

4. For the following functions find $f \circ g$, $f - g$, $\frac{f}{g}$

   (a) $f(x) = 3x - 9, \quad g(x) = x^2 + 7$
   (b) $f(x) = \sqrt{x-1}, \quad g(x) = x^4 + 2$

5. Find the vertex and the x-intercepts of the following quadratic functions

   (a) $f(x) = x^2 - 9x + 2$
   (b) $f(x) = 4x - 1 - 4x^2$

6. Find the inverse function (if it exists) of the following functions

   (a) $f(x) = \frac{2}{\sqrt{x}}$
   (b) $h(x) = (x-2)^2 - 9$

7. Find all zeros of the functions (Real and Imaginary)

   (a) $f(x) = x^2 + 1$
   (b) $f(x) = x^2 + x + 2$
   (c) $f(x) = 2x^4 - 6x^3 - 4x^2 + 20x - 24, \quad$ given $f(1+i) = 0$

8. Write $f(x)$ as $f(x) = q(x)d(x) + r(x)$ (Division Theorem)

   (a) $f(x) = x^3 + 2x + 9, \quad d(x) = x - 3$
   (b) $f(x) = x^5 + 3x^4 + 9x + 2, \quad d(x) = x + 2$

9. Determine if -3 is a root of $f(x) = 2x^4 - 6x^3 - 38x^2 + 54x + 180$ (use synethetic division)

10. Write the definitions of the following

    (a) The inverse function of f

    (b) A polynomial

    (c) Root of a function

    (d) Rational Function

(Select) Solutions to the problems will be available at
`http://rylai.dyndns.org/review_1.pdf`
You can reach me via e-mail at `awknaust@miners.utep.edu`
I expect you all to do well on the exam! Good Luck!