Math 1470 – Fall 2012 Names_____

Final Review

For full credit **show all your work** and **circle your answer**.

Solve the following:

1) Solve and, if possible, write your answer using both inequality notation and interval notation.

$\sqrt{x^2} < 10$

2) Find a line perpendicular to $y = 3x + 2$ and passing through the point (2,-3). Graph both and provide an equation for the new line in slope intercept form.

3) Divide $(2x^7 - 5x^3 + 3) \div (x - 4)$

4) Find all roots exactly for the polynomial: $P(x) = x^4 + 3x^3 - 1x^2 - 3x$.

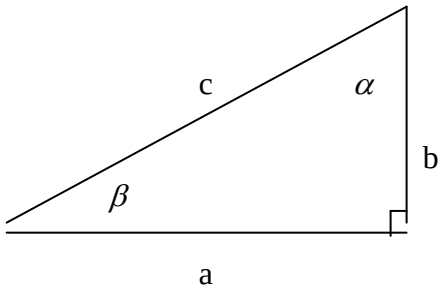
5) Solve exactly:

$\ln 6 - \ln x = 2$

6) Solve exactly for all values of Theta:

$\cos \Theta = \frac{\sqrt{3}}{2}$

7) Find the unknown side lengths **AND** unknown angle measures of the triangle below if b=3 inches and $\alpha = 60°$.



8) Simplify to a single expression with coefficient of 1.

$2\log_b x - \log_b y =$

9) Verify the following identity:

$\sin^2 x = \cos(2x)$

10) Solve the following to four decimal places $\sin 2x = 2\cos x$

11) Solve: $\dfrac{3a-1}{a^2+4a+4} - \dfrac{3}{a^2+2a} = \dfrac{3}{a}$

12) Solve the system of equations using a matrix. Show the matrix you used!

$5x + 2y - z = 8$

$5x - 2y + 5z = 32$

$x + 2y + z = 10$

13) In an arithmetic sequence $a_4=40$ and $a_{10}=94$. Find the first five terms of the sequence:

14) Find the sum of:

$$\sum_{i=2}^{7} 2i^2$$

15) Determine whether the sequence is geometric, arithmetic, or neither. Then find the common ratio *r* if its geometric, the common difference *d* if the sequence is arithmetic AND a formula.

8, 12, 18, 27, …