Math 1470 – Fall 2015 Names:

Ch 1-3 Review

For full credit **show all your work**. Put the writer's name in the margin next to the problem.

1) Divide $(3x + 2 + 2x^3) \div (x - 1)$ using algebraic long division.

2) Divide $(3x^4 - 5x^2 + 3) \div (x + 2)$ using synthetic division.

3) Find, and simplify, a polynomial that has zeros of 3, 2, and 0.

4) Find all roots exactly for the polynomial $P(x) = x^4 + 2x^3 - 2x^2 - 6x = 3$.

Let f(x) = $\frac{1}{x+2}$ and g(x) = $x^2 + 4x + 4$

5) Find $(f \circ g)(x)$.

6) Find $f(x) \cdot g(x)$.

7) Find $\frac{g(x) - g(x+h)}{h}$

8) Find a line perpendicular to $y = 4x + 3$ and passing through the point (4, -7). Graph both and provide an equation for the new line in slope intercept form.

Solve the following equations:

9) $\dfrac{3a-1}{a^2+4a+4}-\dfrac{3}{a^2+2a}=\dfrac{3}{a}$

10) Solve and, if possible, write your answer using both inequality notation and interval notation. $\sqrt{x^2}<3$

11) $\dfrac{2x^2+7x+3}{2x^2-7x-4}=1$

12) $\dfrac{t}{t+3}+\dfrac{4t}{t-3}-\dfrac{18}{t^2-9}=1$

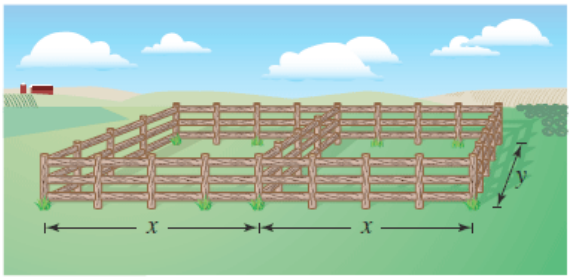
13) Find the center and radius of the circle given by: $x^2+y^2-4x-6y=51$

14) $\dfrac{6}{y+4}+1=\dfrac{5}{2y+8}$

15) $\dfrac{1}{b-5}-\dfrac{10}{b^2-25}=\dfrac{1}{b+5}$

16) $\dfrac{x-\dfrac{1}{x}}{1+\dfrac{1}{x}}=3$

17)) A rancher has 1200 feet of fencing to enclose two adjacent rectangular corrals (see figure).



Write the area A of the corrals as a function of x.

$A =$

Write the area function in **standard form** to find analytically the dimensions that will produce the maximum area. (Use A for $f(x)$.)

$x=$ _____ $y=$ _____