MATH 6: HOMEWORK 27
FACTORIZATION. DIVISION OF EXPRESSIONS.

1. Factor:

a. $6a + 12 =$

b. $mn + n =$

c. $5xy - 15x =$

d. $4ax - 8ax^2 + 12ax^3 =$

2. Factor using the factorization identities we learned above:

a. $9 - x^2 =$

b. $x^6 - 4 =$

c. $9 - 6x + x^2 =$

d. $a^3 - 2a^2x + ax^2 =$

3. Show that the left hand side (LHS) = right hand side (RHS):

a. $(m - n)(a + b) + m - n = a(m - n) + (b + 1)(m - n)$

b. $x^2(x + 1) - x - 1 = x(x + 1)^2 - (x + 1)^2$

c. $2x(x + b) + a(x + b) = (2x + a)x + (2x + a)b$

d. $(a + b)^2 + c(a + b) = (a + b)(a + c) + (a + b)b$

4. Complete the long division of polynomials:

(a) $x^2 - 3x - 4$ by $x - 4$

(b) $x^3 - 2x^2 + 2x - 4$ by $x - 2$

(c) $x^4 + 3x^3 - x^2 - x + 6$ by $x + 3$

(d) $2x^4 - 5x^3 + 2x^2 + 5x - 10$ by $x - 2$

5. Solve by first guessing one solution, and then using polynomial division.

(a) $2x^2 + 3x - 14 = 0$

(b) $3x^2 - 10x + 3 = 0$

(c) $5x^2 + 8x - 4 = 0$

6. Solve the following inequalities:

(a) $\frac{x}{x+1} > 2$

(b) $(1 - x)(2x + 1) < 0$