HW 9-1 Name_____
Polynomial Inequalities Period_____

Part 1: Determine the x-values that cause the polynomial to be (**a**) zero, (**b**) positive, (**c**) negative.

1. $f(x) = (x + 2)(x + 1)(x - 5)$

2. $f(x) = (x - 7)(3x + 1)(x + 4)$

3. $f(x) = (x + 7)(x + 4)(x - 6)^2$

4. $f(x) = (5x + 3)(x - 1)(x - 2)^3$

Part 2: Solve the inequality using a sign chart. Complete the factoring if needed. Write your answer in interval notation.

5. $(x + 1)(x - 3)^2 > 0$

6. $(2x + 1)(x - 2)(3x - 4) \leq 0$

7. $(x + 1)(x^2 - 3x + 2) < 0$

8. $(2x - 7)(x^2 - 4x + 4) > 0$

9. $(x + 2)(2x - 1)(x - 3) \geq 0$

10. $(x + 1)(x^2 - 5x + 6) \leq 0$

11. $x^3 - x^2 - 2x \geq 0$

12. $2x^3 - 5x^2 + 3x < 0$

13. $x^3 - 4x^2 - x + 4 \leq 0$

14. $x^3 - 4x^2 + x + 6 \leq 0$

Review

Find the factors of the following polynomials

1. $f(x) = 2x^3 - x^2 - 13x - 6$

2. $g(x) = x^4 - 5x^2 + 4$

Factor the following:

3. $16n^3 - 2n^2 + 24n - 3$

4. $25p^2 - 16$

5. $9x^2 + 6x + 1$

6. $x^4 - 4x^2 - 45$