Name _____ Date 9/6

Break It Down
Factoring Higher Order Polynomials

Problem Set

Factor each expression completely.

1. $x^2 + 12x - 13$

   $x^2 + 12x - 13 = (x + 13)(x - 1)$

2. $x^2 + 6x + 8$

3. $x^2 - 12x - 28$

4. $x^2 + 30x + 81$

5. $x^2 - 5x - 14$

6. $x^2 - 16x - 36$

Factor each expression by factoring out the greatest common factor.

7. $2x^5 - 8x^4 + 10x^3$

   $2x^5 - 8x^4 + 10x^3 = 2x^3(x^2 - 4x + 5)$

8. $-9x^4 + 45x^3 - 9x^2$

9. $105x^3 - 147x$

10. $-\frac{3}{5}x^4 + \frac{3}{5}x^3 - \frac{27}{5}x^2$

11. $\frac{1}{3}x^4 - \frac{8}{3}x^3 + \frac{1}{3}x^2 - \frac{11}{3}x$

12. $8x^4 - 16x^3 + 56x^2 - 24x$

Factor each binomial completely over the set of real numbers using the difference of squares method.

37. $x^2 - 100$

$a^2 - b^2 = (a + b)(a - b)$

$x^2 - 100 = (x + 10)(x - 10)$

38. $x^4 - 36$

39. $49x^2 - 4y^2$

40. $x^{10} - 81$

41. $9x^4 - 121y^2$

42. $4x^{14} - 9y^8$

Factor the following completely:

44. $x^3 - 49x$

46. $4x^3y - 100xy$

48. $18a^2c - 98b^2c$

49. $2x^3 + 6x^2 - 36x$