

Name: _____

Factoring Polynomial Functions

Exercise 1: Factor by grouping (Hint: Use groups of three.)

1) $ad - ae - af + bd - be - bf$

2) $xy + xz - 4x - 3y - 3z + 12$

3) $3x^2 + 12xz - 15x - 2xy - 8yz + 10y$

4) $12ab - 8ac - 20ad + 3b^2 - 2bc - 5bd$

Exercise 2: Factorize

1) $\frac{x^2}{y^2} - \frac{a^2}{b^2}$

2) $\frac{p^2}{q^2} - \frac{r^2}{t^2}$

3) $\frac{16}{25} - \frac{x^2y^2}{9}$

4) $\frac{a^2b^2}{81} - \frac{100}{c^2}$

5) $x^2 - 20x + 100$

6) $x^2 + 8x + 16$

7) $x^2 + 2x + 1$

8) $x^2 - 14x + 49$

9) $x^2 + 18x + 81$

10) $x^2 - 24x + 144$

11) $x^2 + 2cx + c^2$

12) $9x^2 - 30x + 25$

13) $4x^2 - 12x + 9$

14) $25x^2 + 40x + 16$

15) $36x^2 - 12x + 1$

16) $4b^2c^2 - 20bcd + 25d^2$

17) $x^2 - 2bx + b^2$

18) $9x^2 + 24xyz + 16y^2z^2$

19) $m^3 - 1$

20) $p^3 - 27$

21) $x^3 + 125$

22) $x^3 - y^3$

23) $c^3 + d^3$

24) $125a^3 - 8b^3$

25) $64x^3 - 27y^3$

Exercise 3: Factor the following. Remember to first factor out the Greatest Common Factor (GCF) of the terms of the polynomial, and to factor out a negative if the leading coefficient is negative.

1) $2x^2 + 10x + 8$

2) $-4x^2 + 40x - 100$

3) $x^3 + 9x^2 - 22x$

4) $3x^2 + 12x - 63$

5) $-10x^2 + 10x + 420$

6) $-x^3 - 4x^2 - 4x$

7) $x^3 - 7x^2 - 6x$

8) $x^5 + 10x^4 + 21x^3$