

Name: \_\_\_\_\_

(1) Perform the indicated operation and simplify your answers:

(a)  $(x + 3)(2x^3 - x - 8)$

(c)  $(x - 5)^2$

(b)  $(x + 4)(x - 4)$

(d)  $(x - 4)(3x - 2) - (2x - 5)(3x - 1)$

(2) Factor out the greatest common factor of the following polynomials:

(a)  $7x + 14$

(c)  $9x^4 - 3x^3 + 11x^2$

(b)  $-24x^2 + 18x$

(d)  $3x^2y + 6x^2y^2 + 3xy$

(3) Factor the following polynomials by grouping.

(a)  $x(x + 9) + 1(x + 9)$

(b)  $x^3 - 3x^2 + 4x - 12$

(c)  $x^2 + 4x - 5x - 20$

(d)  $-2x^3 + 10x^2 + 4x - 20$