

Work on as many problems as you can together with your group members. Towards the end of lecture your group will be asked to present a problem correctly to receive classwork points.

1. Determine if the following are polynomials. If they are, write the polynomial in standard form and state its degree:

(a)  $\frac{5x + 3}{x}$

(b)  $x^2 + 7x^4 + 4x + 9x^3 - 4$

(c)  $2x + 3x^{-1} - 5$

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

2. Perform the indicated operation:

(a)  $(-7x^3 + 2x^2 - 2x + 9) + (6x^3 + 6x^2 - 5x - 10)$

(b)  $(3x^3 - 4x^2 + 3x - 5) - (6x^3 - 7x^2 - 10x + 4)$

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

(d)  $(3x - 7)(3x + 10)$

(e)  $(2x + 3)(2x - 3)$

3. Perform the indicated operation:

(a)  $(5x + 6)^2$

(b)  $(5x^2y - 8xy) + (10x^2y - 11xy)$

(c)  $(x^3 - 5xy + 10y^2) - (7x^3 + 10xy + 9y^2)$

(d)  $(x + 7y)(3x + 5y)$

4. Factor the following polynomials completely or state the the polynomial is prime:

(a)  $24x^2 + 18x$

(b)  $x(x + 10) - 8(x + 10)$

(c)  $x^3 - 4x^2 + 4x - 16$

(d)  $3x^3 - 2x^2 - 21x + 14$

(e)  $x^2 - 15x + 56$

5. Factor the following polynomials completely or state the the polynomial is prime:

(a)  $3a^2 - 8a - 28$

(b)  $9x^2 - 4$

(c)  $z^4 - 1$

(d)  $y^2 + 10y + 25$

(e)  $8x^3 + 1$

6. Factor the following polynomials completely or state the the polynomial is prime:

(a)  $6x^3 - 6x$

(b)  $2x^2 + 24x + 64$

(c)  $x^2 + 36$

(d)  $48y^4 - 3y^2$