

Instructions: Complete these problems for homework due on the date above. The problems should look very similar to those that were covered during our class meeting covering §7.1-7.4 & §10.1. As always show all work and please box your final answer.

1. Circle all that are polynomials in one variable.

a) $7x^2y - 5x^3y^2 - 9xy - 2y$ b) $-2x^4$ c) $2x^{-2} + 5x^{-1} - 3$

d) $6y^2 + 7y^4 - 3y - \frac{1}{2}$ e) $-5x - 5x^2$

e) $2x - x^{2/3} + x - \frac{5}{x}$ f) $\frac{3}{7} - \frac{5}{7}x$

2. Circle all that are polynomials in two variables.

a) $7x^2y - 5x^3y^2 - 9xy - 2y$ b) $-2x^4$ c) $2x^{-2} + 5x^{-1} - 3$

d) $6y^2 + 7y^4 - 3y - \frac{1}{2}$ e) $-5x - 5x^2$

e) $2x - x^{2/3} + x - \frac{5}{x}$ f) $\frac{3}{7} - \frac{5}{7}x$

3. Name each polynomial appropriately as monomial, binomial or trinomial. If it is not any of these just write polynomial.

a) $2 - 5x + 3x^3 - 2x^2$ b) $\frac{7x}{2}$ c) $x + 9x^2$ d) $7x^5 + 9 - 8x^3$

4. Name each polynomial as linear, quadratic or cubic. If it is not any of these, write the degree of the polynomial.

a) $2 - 5x + 3x^3 - 2x^2$ b) $\frac{7x}{2}$ c) $x + 9x^2$ d) $7x^5 + 9 - 8x^3$

5. **Order each polynomial** from highest to lowest degree term (leave blanks for missing degree terms too). Give the **leading coefficient**.

a) $2 - 5x + 3x^3 - 2x^2$

Leading Coefficient: _____

Ordered:

b) $7x^5 + 9 - 8x^3$

Leading Coefficient: _____

Ordered:

6. Add/Subtract/Simplify the following polynomials/algebraic expressions.

a) $3x^2y + 2xy - 2x - 5xy + 15x$

b) $(4x + 9 - 3x^2) - (x - 9x^2 + 1)$

7. If $f(x) = 7x^2 - 3x + 5$ & $g(x) = 2x^2 - 9$

a) $(f + g)(x)$

b) $(f - g)(x)$

c) $(f + g)(-3)$

8. Use exponent rules to simplify each of the following.

a) $y^3 \cdot y^5 \cdot y^2 \cdot y$

b) $-3x^3 \cdot 4x^5$

c) $(x^5)^4$

d) $\frac{y^7}{y^5}$

e) $\frac{x^8y^7}{x^2y^{12}}$

f) $(x^5y)^3$

g) $\left(\frac{y^3}{x^7}\right)^5$

h) $y^2z^3 \cdot y^3z$

i) $\frac{21x^{24}}{14x^{19}}$

h) $(3x^4)^2$

9. Use exponent rules to simplify each of the following.

a) $(-3x^2y^3)^{2/3}xy^5$

b) $(-2x^2y^3)^4$

c) $(3x)^{-3}$

d) $\frac{5x^3y^3}{28x^7y^9} \cdot \frac{2xy^{12}}{15x^5y^2}$

e) $(x - 5)^0$

f) $\frac{5y^{-3}}{7z}$