

Mth 28.5, Homework 4 on sections 5.1, 5.2, 5.3

Due by Mon, Oct 7.

Try these 20 questions. Please use lots of space and as many pages as you want, so I can include corrections or comments. You do not need to write the questions, but it is very important that you show clearly any work you had to do to get your answers. Each question is worth 2 points for a total of 40.

Section 5.1 Add and subtract polynomials

(1) For these polynomials, say how many terms each has. Then give the degree of the polynomial.

(a) $6x^3 - 14x^2 + x - 14$

(b) $20x^3y^2 - 5xy$

(c) $\frac{3}{4}w^{10} + 6w^6 - \frac{1}{2}w$

(d) 15

(2) Simplify the polynomial $3x^2 + 4x^2 - 2x^2 - 7x - x$ by combining like terms.

(3) Simplify: $9x^2y + xy + 3y + 10xy - 3y - (-4x^2y)$

(4) Add these polynomials: $(x^2 + 3x + 8) + (x^2 - x + 3)$

(Hint: we can safely remove the parentheses – then combine like terms.)

(5) Add: $(4y^3 + 3y^2 - 6) + (-7y^3 + 8y^2 - y + 6)$

(6) Subtract: $(p^2 - 2p + 5) - (p^2 - 6p + 4)$

(Hint: make the correct sign changes when removing the second pair of parentheses.)

(7) For polynomial function $f(x) = 4x^2 - 4x + 3$ compute:

(a) $f(0)$

(b) $f(2)$

(c) $f(-3)$

(Hint: replace x by each input and then carefully calculate the output using the correct order of operations.)

More on the next page...

Section 5.2 Properties of exponents

- (8) Simplify using properties of exponents: (a) x^4x^3 (b) $\frac{y^{10}}{y^2}$ (c) x^0 (d) $w^2w^5w^{-9}$
- (9) Simplify using properties of exponents: (a) $(x^3)^5$ (b) $\left(\frac{y}{3}\right)^4$ (c) $(5xy)^2$
- (10) Simplify: $(4a^2)^3(2a)^{-2}$
- (11) Simplify: $\frac{(2xy)^4(3x^2)^3}{6x^3y}$
(Hint: use the properties of exponents in the correct order. Did you get $72x^7y^3$?)
- (12) True or false? (a) $\frac{1}{y^2} = y^{-2}$ (b) $0^6 = 1$ (c) $w(w)(w^2) = 4w$ (d) $(-x)^5 = -x^5$
- (13) Write these decimals in scientific notation: (a) 0.0000456 (b) 782000000000
- (14) Convert this scientific notation to a decimal: 2.75×10^{-6}
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Section 5.3 Multiply polynomials

- (15) Multiply these monomials: (a) $(-4x^3)(-3x^2)$ (b) $\left(\frac{3}{4}y^2\right)(-8y^4)$
- (16) Multiply: $3x^2(x^2 - 5x + 4)$
- (17) Multiply: $(x + 4)(x + 5)$
(Hint: use the FOIL method and combine like terms.)
- (18) Multiply: $(5x - 2)(2x + 7)$
- (19) True or false? (a) $(x + 3)^2 = x^2 + 9$ (b) $0(y + 6) = 0$ (c) $(x + 3)(x - 3) = x^2 - 9$
- (20) Multiply by distributing: $(x + 6)(4x^2 - 5x + 2)$
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If you get stuck on a question or aren't sure if you understand it:

- Go over the relevant class notes and section in the textbook.
- Check if you get the right answer for a similar odd-numbered question in the textbook (answers at the back of the book).
- Ask me about it after class.
- Come to my office hours: Mon 12:00 - 1:00, Wed 12:00 - 1:00 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.