

Mth 28.5, Homework 4 on Sections 3.5, 5.1

Due by Wed, Sept 30.

Try these 12 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.

Section 3.5 Relations and functions

- (1) For a function f we have $f(3) = 10$. Identify the input and the output.
- (2) Evaluate $f(4)$ if $f(x) = -3x + 5$.
(Hint: just replace all the x s by 4 and work out the number.)
- (3) The function g is given by $g(x) = x^2 - x + 2$.
- (a) Evaluate $g(0)$
 - (b) Evaluate $g(1)$
 - (c) Evaluate $g(5)$
- (4) The function h is given by $h(x) = \frac{2x - 1}{x + 2}$.
- (a) Evaluate and simplify $h(0)$
 - (b) Evaluate and simplify $h(3)$
 - (c) Evaluate and simplify $h(-7)$
- (5) If f is the function $f(x) = 4x - 3$ then evaluate and simplify $f(x + 2)$.
(Hint: now replace all the x s by $x + 2$. Your answer will be an algebraic expression, not just a number.)
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Section 5.1 Add and subtract polynomials

- (6) 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

- (7) Simplify the polynomial $3x^2 + 4x^2 - 2x^2 - 7x - x$ by combining like terms.
- (8) Simplify: $9x^2y + xy + 3y + 10xy - 3y - (-4x^2y)$
- (9) Add these polynomials: $(x^2 + 3x + 8) + (x^2 - x + 3)$
(Hint: we can safely remove the parentheses and then combine like terms.)
- (10) Add: $(4y^3 + 3y^2 - 6) + (-7y^3 + 8y^2 - y + 6)$
- (11) Subtract: $(p^2 - 2p + 5) - (p^2 - 6p + 4)$
(Hint: make the correct sign changes when removing the second pair of parentheses.)
- (12) 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.)
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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.
- 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.