

Mth 28, Homework 3 on sections 6.5, 7.1

Due by Wed, Oct 8.

Write all your working out and answers neatly by hand on your own notepaper. 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.

Section 6.5 Polynomial equations

- (1) Solve using the zero product property: $(x - 4)(2x + 3) = 0$

(Write your final answer as "The solutions are $x = \dots$ and $x = \dots$ ".)

- (2) Solve and check your solutions work: $x^2 - x - 20 = 0$

(Hint: Factor the left side and then use the zero product property to get the two solutions. Substitute your solutions and check you get true equations.)

- (3) Solve:

(a) $2x^2 = 32$

(b) $2x^2 = 32x$

(For both of these, move everything to the left first to get it equal to zero. Then factor the left side...)

- (4) Solve and check your solutions: $x^2 = -2x + 15$

- (5) Solve: $4x^2 + 3x = 10$

- (6) Solve: $(2y - 3)(3y - 1) = 8y$

(Hint: multiply out the left side first, then move everything to the left.)

- (7) The product of two consecutive positive odd numbers is 99. Find these two numbers with the following steps.

(a) Let x be the first of the consecutive odd numbers. Then the second must be $x + 2$, like 5 and 7 for example.

(b) Make an equation from the information in the question.

(c) Solve it by factoring to get possibilities for x . The x we want has x and $x + 2$ positive, these are the numbers we're looking for.

(d) Word problems should be answered in English: "The two consecutive positive odd numbers are"

Section 7.1 Multiply and divide rational expressions

- (8) Explain the mistake: $4 = \frac{12}{3} = \frac{10+2}{1+2} = \frac{10+\cancel{2}}{1+\cancel{2}} = \frac{10}{1} = 10$
- (9) Simplify this fraction: $\frac{30}{42}$
- (10) Simplify this rational expression: $\frac{10x-20}{x^2-2x}$
(Hint: as in the previous question, look for common factors to cancel from the top and bottom.)
- (11) Simplify: $\frac{2x-3}{3-2x}$
- (12) Give the x values where this rational expression is undefined: $\frac{x^2}{x^2+3x-18}$
(Hint: find where the bottom equals zero. So solve $x^2+3x-18=0$.)
- (13) Perform the indicated operation and simplify: $\frac{5}{6} \cdot \frac{9}{10}$
(I hope you multiplied straight across.)
- (14) Perform the indicated operation and simplify: $\frac{x+4}{x^2+3x-18} \cdot \frac{x-3}{16-x^2}$
(Hint: factor each part first. Look for cancellation. Leave the denominator factored - no need to multiply it out. It is more useful in factored form.)
- (15) Perform the indicated operation and simplify: $\frac{4x^2+x-5}{x^3-x^2} \cdot \frac{x^2+2x}{x^2+3x+2}$
- (16) Perform the indicated operation and simplify: $\frac{7}{10} \div \frac{7}{2}$
(Flip over the second fraction and change the division to multiplication. Your final answer should have a 1 on the top.)
- (17) Perform the indicated operation and simplify: $\frac{4+x}{8+x} \div \frac{16-x^2}{16+2x}$
- (18) Perform the indicated operation and simplify: $\frac{x^2-x-12}{5x} \div (x^2-9)$

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 11:30 - 12:30, Wed 11:30 - 12:30 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.