

12011, Section 002, Calculus with Precalculus I.

Home Work 4, due Wednesday September 27

Instructor: Prof. Artem Zvavitch

You must show all details of your calculations!

Problem 1. *Solve*

- $4x + 6 = 7$
- $4x^2 + 6x = 7x$
- $\frac{1}{3}x + \frac{1}{2} = \frac{x}{9}$

Problem 2. *Find all real solutions of the quadratic equation*

- $x^2 - 6x + 1 = 0$
- $5x^2 - 7x + 5 = 0$
- $8z^2 - 6z - 9 = 0$

Problem 3. *Find all real solutions of the equation*

- $(x^2 - 6x + 1)(5x^2 - 7x + 5) = 0$
- $\frac{1}{x-1} + \frac{1}{x+2} = \frac{5}{4}$
- $\sqrt{5-x} + 1 = x - 2$
- $x^4 - 13x^2 + 40 = 0$
- $x - 5\sqrt{x} + 6 = 0$
- $|x + 2| = 3$

Problem 4. *Simplify*

- $\frac{2x^3 - x^2 - 6x}{2x^2 - 7x + 6}$
- $\frac{1 - x^4}{x^4 - x}$
- $\frac{x^2 + 7x + 12}{x^2 + 3x + 2} \times \frac{x^2 + 5x + 6}{x^2 + 6x + 9}$
- $\frac{2x^2 + 3x + 1}{x^2 + 2x - 15} \div \frac{x^2 + 6x + 5}{2x^2 - 7x + 3}$
- $\frac{3x+1}{x-1} + \frac{x}{x^2+5x-6}$
- $\frac{1}{x^2-1} - \frac{x+3}{x^2+x-2}$