

Calculus with Precalculus I (12011 Section 02)

Exam 1.

Instructor: Prof. Artem Zvavitch

There are 7 problems, all together 110pts the maximal grade
is 100pts. GOOD LUCK

Problem 1. (10pts) *Simplify*

$$\frac{(y^{-2}x^{\frac{1}{2}})^2}{\sqrt{x^4y^{-\frac{1}{2}}}}$$

Problem 2. (15pts) *Find the domain of function*

$$f(x) = \sqrt{1-x} + \sqrt{x+1}.$$

Problem 3. (15pts) Find an equation of the line through point $(2, -3)$ and parallel to the line $x + 2y = 1$.

Problem 4. (20pts) Find maximum or minimum of the following function

$$f(x) = 2x^2 - 2x - 12.$$

Also find x -intercepts and y -intercepts and sketch the graph of this function.

Problem 5. (15pts) *Solve*

$$x - \sqrt{x} - 6 = 0.$$

Problem 6. (20pts) *Simplify*

$$\frac{1}{4-x^2} + \frac{1-x}{x^2-x-6} - \frac{x+1}{x-3}.$$

Problem 7. (15pts) Give a definition of increasing function. Show that $f(x) = 2x^2 - 2x - 12$ is not increasing function on the interval $[-2, 3]$. Find the average rate of change of this function on the interval $[-1, 1]$.