

Calculus with Precalculus I (12011 Section 02)
Home Work 3, due Wednesday, September 20.
Instructor: Prof. Artem Zvavitch

Problem 1. *Find the domain of function*

- $f(x) = \frac{1}{x+2}$.
- $f(x) = \sqrt{x+2}$.
- $f(x) = \frac{1}{\sqrt{x+2}}$.
- $f(x) = \frac{1}{x} + \frac{1}{x+1}$.
- $f(x) = \frac{1}{\sqrt{x^2+x-2}}$.

Problem 2. *Sketch the graph of the following functions*

- $f(x) = \sqrt{x+1}$.
- $f(x) = \sqrt{3-x}$.
- $f(x) = (x+2)^3$.
- $f(x) = |x-2|$.
- $f(x) = x^2 - 4x + 5$.
- $f(x) = -3x^2 + 12x - 15$.

Problem 3. *Sketch the graph of the functions and find its minimum or maximum value*

- $f(x) = x^2 + 2x + 2$.
- $f(x) = -x^2 + 4x - 1$.
- $f(x) = -2x^2 + 5$.

Problem 4. *A manufacturer finds the revenue generated by the selling x units of a certain commodity is given by the function*

$$R(x) = 80x - 0.4x^2,$$

where the revenue $R(x)$ is measured in dollars, Which is the maximum revenue, and how many units should be manufactured to obtain this maximum?