

12012, Sections 001 and 002, Calculus with Precalculus II.

Home Work 2, due Wednesday January 31

Instructor: Prof. Artem Zvavitch

You must show all details of your calculations!

**Problem 1.** *Differentiate the function*

- $f(x) = \sqrt{7} + 2$
- $f(x) = 3x^5 - 6x^3 + 4x - 1$
- $f(x) = \frac{3x^5 - 6x^3 + 4x - 1}{x+1}$
- $f(x) = 3\sqrt{x} - 4x^{\frac{3}{4}} + \frac{6}{x^{\frac{3}{2}}}$
- $g(t) = t^2 - \frac{t+1}{\sqrt{t}}$
- $y(u) = \frac{1}{u^4 + u^2 + 1}$
- $f(x) = 3 \sin x - 2 \tan x + x^2 \cos x$
- $f(x) = \frac{\sin x}{x+1}$
- $f(x) = x \sin x \cos x$
- $f(x) = \sqrt{1 - 2x}$
- $f(x) = \sin 3x$
- $f(x) = \sin x^2$
- $f(x) = \sin(\tan x)$
- $f(x) = \sqrt{\frac{x+1}{x-1}}$
- $u(t) = t \sin \frac{1}{t}$
- $f(x) = \sqrt{x + \sqrt{x + \sqrt{x}}}$