

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

HomeWork 10, due FRIDAY April 23

Instructor: Prof. Artem Zvavitch

You must show all details of your calculations!

**Problem 1.** *Simplify*

- $\tan(\cos^{-1} x)$ .
- $\cos(\sin^{-1} \frac{2}{5})$ .

**Problem 2.** *Compute the derivative at the indicated point (without using a calculator)*

- $y = \cos^{-1} x, x = \frac{1}{4}$ .
- $y = \tan^{-1} 2x, x = 3$ .

**Problem 3.** *Find the derivative*

- $f(x) = \sin^{-1}(5x) + x^2$ .
- $f(x) = x^2 \tan^{-1} x$ .
- $f(x) = \cos^{-1} \frac{1}{x} + e^{\sin^{-1} x}$ .
- $f(x) = \ln(\sin^{-1} x^2)$ .

**Problem 4.** *Find the integral*

- $\int_0^{1/2} \frac{1}{\sqrt{1-x^2}} dx$ .
- $\int_0^2 \frac{dx}{x^2+4}$ .
- $\int \frac{dt}{\sqrt{16-t^2}}$ .
- $\int \frac{dt}{\sqrt{1-16t^2}}$ .
- $\int \frac{dx}{x\sqrt{1-x^4}}$ .
- $\int \frac{e^x}{1+e^{2x}} dx$ .
- $\int \frac{\tan^{-1} x dx}{1+x^2}$ .