12012, Sections 001 and 002, Calculus with Precalculus II.
Home March 7, due Wednesday
Instructor: Prof. Artem Zvavitch
You must show all details of your calculations!

Problem 1. *Evaluate the integral*

- $\int (x-8)^4 dx.$
- $\int 2x\sqrt{x^2+1}dx.$
- $\int \sin^5 x \cos x dx.$
- $\int (x+1)^{-2} dx.$
- $\int x \cos x^2 dx.$
- $\int \frac{x^3}{(x^4+1)^4} dx.$
- $\int_1 x^{1/2} \cos x^{3/2} dx.$
- $\int_0 (x+2)^{3/2} dx.$
- $\int_0^4 x\sqrt{x^2+9}dx.$
- $\int_0^{\pi/2} \cos(3x+\pi/2)dx.$
- $\int_0^{\pi/2} \cos^2 x \sin x dx.$

Problem 2. *Sketch the region enclosed by the given curves and find the area of this region:*

- $y = x+1,\ \ y = 9-x^2,\ \ x=-1,\ \ x=2.$
- $y = \sqrt{x+3},\ \ y = (3+x)/2.$
- $y = \sqrt{x},\ \ y = \frac{1}{2}x,\ \ x = 9.$
- $y = \cos x,\ \ y = \sin 2x,\ \ x = 0,\ \ x = \pi/2.$
- $y = |x|,\ \ y = x^2 - 2.$