

MAC 2312 Calculus II, Worksheet #2 (Sec 6.1)

Date: _____

Name: _____

For the following problems:

1. Sketch the Region
2. Decide whether to integrate with respect to x or y
3. Find the limits, if need be
4. Set up the Integral for the Area
5. Solve the Integral to find the Area

Q1) $y = \sin x$, $y = x$ between $x = \frac{\pi}{2}$ to $x = \pi$. Answer: $\frac{3\pi^2}{8} - 1$

Q2) $y = x^2 - 2x$, $y = x + 4$. Answer: $\frac{125}{6}$.

Q3) $4x + y^2 = 12$ and $x = y$. Answer: $\frac{64}{3}$.

Q4) The region enclosed between $y = 12 - x^2$, $y = x^2 - 6$. Answer: 72.

Q5) The region enclosed between $x = 2y^2$, $x = 4 + y^2$. Answer: $\frac{32}{3}$.

Q6) The region enclosed between $y = \tan x$, $y = 2 \sin x$. Answer: $2 - 2 \ln 2$.

Q7) The region enclosed between $y = x^3$, $y = x$. Answer: $\frac{1}{2}$.

Problem 8: Evaluate the Integral and interpret it as the area of a region and Sketch the region

$$\int_0^{\frac{\pi}{2}} |\sin x - \cos(2x)| dx.$$

Answer: $\frac{3}{2}\sqrt{3} - 1$.