MATH 253 HANDOUT #4

A

1.Find the trapezoid approximation of $\int_0^2 \frac{1}{1+x^2}\,dx$ for $n=4$.

Can you calculate the integral exactly?

2.Find the volume of the solid obtained by rotating the region D around y-axis, where D is the region bounded by curves $y=\frac{6}{x}, x=2, y=2$.

3.Find the arclength of the curve $y=\ln(\sin x)$ between $x=\frac{\pi}{4}$ and $x=\frac{\pi}{2}$.

B

1.Find midpoint approximation of $\int_1^3 \frac{1}{x-4}\,dx$ for $n=3$.

Use it to approximate $\ln 3$.

2.Find the volume of the solid obtained by rotating the triangle T with vertices at the points $(1,1),(1,-2)$ and $(2,0)$ around y-axis.

3.Find the length of the curve $y^3=x^2$ between points $\mathrm{O}(0,0)$ and $P(8,4)$.

C

1.Find midpoint approximation of $\int_1^3 \frac{1}{x}\,dx$ for $n=4$.

Can you calculate the error?

2..Find the volume of the solid obtained by rotating the region D around x-axis, where D is in the first quadrant below the graph of $y=2-x^2$ and above the line $y=x$.

3.Find the length of the part of the circle $x^2+y^2=5$ between points $Q(2,1)$ and $P(1,2)$.

D

1. Find the trapezoid approximation of $\int_1^2 \frac{1}{x^2}\,dx$ for $n=3$.

Can you calculate the error?

2. Find the volume of the solid obtained by rotating the region D around x-axis, where D is the region bounded by the graph of $y=\frac{2}{x}$ and the lines $x=\frac{1}{2}, x=1, y=4$.

3.Find the length of the curve $y^2=x^3$ between points $\mathrm{O}(0,0)$ and $P(4,-8)$.