

Lecture 20: Double integrals

- 1 Find the area of the region enclosed by the curves $y = x - x^3$ and $y = x/4$.
- 2 Set up a double integral of a function $f(x, y)$ over the region bound by $y = 2x$ and $x = 2y^2$ and $y = 1$.

- 3 Match the integrals with those obtained by changing the order of integration. No justifications are needed. Note that one of the Roman letters I)-V) will not be used, you have to chose four out of five.

Enter I,II,III,IV or V here.	Integral
	$\int_0^1 \int_{1-y}^1 f(x, y) dx dy$
	$\int_0^1 \int_y^1 f(x, y) dx dy$
	$\int_0^1 \int_0^{1-y} f(x, y) dx dy$
	$\int_0^1 \int_0^y f(x, y) dx dy$

I) $\int_0^1 \int_0^x f(x, y) dy dx$

II) $\int_0^1 \int_0^{1-x} f(x, y) dy dx$

III) $\int_0^1 \int_x^1 f(x, y) dy dx$

IV) $\int_0^1 \int_0^{x-1} f(x, y) dy dx$

V) $\int_0^1 \int_{1-x}^1 f(x, y) dy dx$