

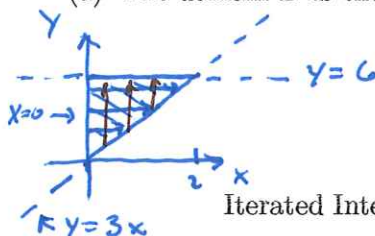
Quiz 5

B Term, 2018

Show all work needed to reach your answers.

1. (8 points) Please set up the iterated integral $\iint_D f(x, y) dy dx$ for each $\iint_D f(x, y) dA$

(a) The domain D is the region between the curves $y = 3x$, $x = 0$ and $y = 6$.

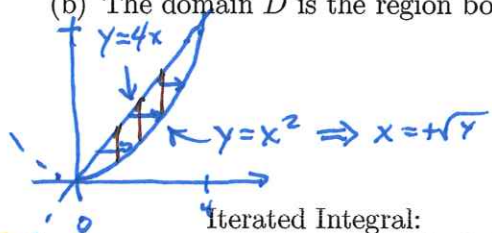


Iterated Integral:

$$\int_0^2 \int_{3x}^6 f(x, y) dy dx$$

High: 25
Median: 23
Low: 17

(b) The domain D is the region bounded by the curves $y = x^2$ and $y = 4x$.

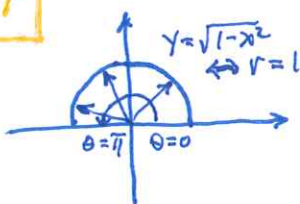


Iterated Integral:

$$\int_0^4 \int_{x^2}^{4x} f(x, y) dy dx$$

#11, 10, 3e
p. 527

2. (10 points) Please evaluate using polar coordinates:



$$\int_{-1}^1 \int_0^{\sqrt{1-x^2}} (x^2 + y^2)^{3/2} dy dx = \int_0^\pi \int_0^1 (r^3) (r dr) d\theta$$

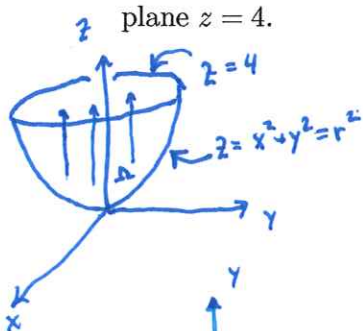
$$= \left(\int_0^\pi d\theta \right) \left(\int_0^1 r^4 dr \right) = \pi \left(\frac{1}{5} \right)$$

$$\pi/5$$

3. (10 points) Please set up (but do not evaluate) an iterated integral for

$$\iiint_{\Omega} f(x, y, z) dV$$

where Ω is the domain bounded below by the paraboloid $z = x^2 + y^2$ and above by the plane $z = 4$.



$$\iiint_{\Omega} f(x, y, z) dV = \int_0^{2\pi} \int_0^2 \int_{r^2}^4 f(r \cos \theta, r \sin \theta, z) dz r dr d\theta$$

