

## MATH 6A WORKSHEET 8

DANNING LU

(1) Evaluate the integrals.

(a)  $\int_{-2}^1 \int_{-1}^2 32x^3y^3 dx dy.$

(b)  $\int_1^2 \int_2^4 \frac{x}{y} dy dx.$

(c)  $\iint_D x \cos(2x + y) dA$  where  $D$  is the region  $0 \leq x \leq \pi/3$ ,  $0 \leq y \leq \pi/4$ .

(2) Evaluate the integrals.

(a)  $\int_0^2 \int_0^x (x + 2y) dy dx.$

(b)  $\int_0^1 \int_{1-x}^{1+x} (24x^2 + 4y) dy dx.$

(c)  $\iint_D xy dA$  where  $D$  is the triangle with vertices  $(0,0), (6,0), (0,1)$ .

(3) Compute the solid under the graph of  $f(x, y) = 3 + 2x^2 + 7y$  over the rectangle  $R = \{(x, y) | 1 \leq x \leq 3, 0 \leq y \leq 1\}$ .

(4) Reverse order of integration.

(a)  $\int_0^1 \int_x^{2x} e^{y-x} dy dx.$

(b)  $\int_0^{2\sqrt{3}} \int_{y^2/6}^{\sqrt{16-y^2}} 1 dx dy.$

(c)  $\int_0^7 \int_{x^2-6x}^x f(x, y) dy dx.$

(d)  $\int_1^2 \int_x^{x^3} f(x, y) dy dx + \int_2^8 \int_x^8 f(x, y) dy dx.$

(5) Evaluate the integral by reversing the order of integration.

$$\int_0^1 \int_{7y}^7 e^{x^2} dx dy.$$

## QUIZZES

NAME:\_\_\_\_\_

PERM:\_\_\_\_\_

Show your work. Points will NOT be awarded for answers with no explanation or necessary steps. NO CALCULATORS. NO NOTES.

- (1) Evaluate the line integral  $\int_c f \, ds$ , where  $f(x, y) = x^3 y^{18}$  and  $c$  is the upper half of the unit circle centred at the origin (i.e., the part of the unit circle that is above the  $y$ -axis). (4 points)

- (2) Evaluate  $\int_c \mathbf{F} \cdot ds$ , where  $c$  is the line connecting  $(0, -\pi)$  and  $(0, 0)$ , and  $\mathbf{F} = \langle e^x \sin y, e^x \cos y \rangle$ . (4 points)

- (3) Evaluate  $\int_c \mathbf{F} \cdot ds$ , where  $c(t) = \langle t \sin t, t \cos t \rangle$ ,  $0 \leq t \leq \pi$ , and  $\mathbf{F} = \langle e^x \sin y, e^x \cos y \rangle$ . (2 points)