

Calc III - Ch 15 – Part 1 - Required Practice

15.1 and 15.2

#1. (i) 248 (ii) 15.5

#2. 60

#3. $\int_0^5 f(x, y) dx = 500y^3$
 $\int_0^1 f(x, y) dy = 3x^2$

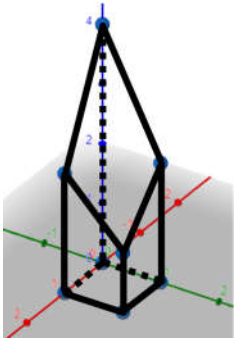
#4. 10

#5. 2

#6. 5814.04

#7. $\frac{21}{2}$

#8.



#8. $\frac{95}{2}$

#9. $\frac{64}{3}$

ANSWERS ONLY

15.3

#1. -1

#2. $-\frac{1}{2}(\cos(1)-1)$

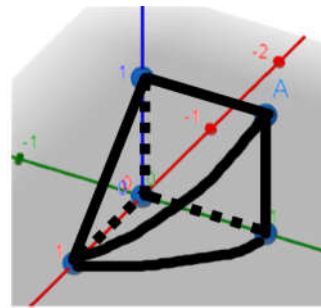
#3. 0

#4. $\frac{31}{8}$

#5. 6

#6. $\frac{128}{15}$

#7.



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

#9. $\frac{1}{3} \ln 9$

15.4

$$\#1. \int_{-1}^1 \int_0^{1-x^2} f(x, y) dy dx$$

$$\#2. \int_0^{3\pi/2} \int_0^4 f(r \cos \theta, r \sin \theta) r dr d\theta$$

$$\#3. \frac{33\pi}{2}$$

$$\#4. 0$$

$$\#5. \frac{\pi}{2} \left(1 - \frac{1}{e^4}\right)$$

$$\#6. \frac{\pi}{12}$$

$$\#7. \frac{16\pi}{3}$$

$$\#8. \frac{4\pi}{3}$$

$$\#9. \frac{2\sqrt{2}}{3}$$

15.5

$$\#1. m = \frac{2}{5}, \quad (\bar{x}, \bar{y}) = \left(\frac{5}{7}, \frac{5}{12}\right)$$

$$\#2. (\bar{x}, \bar{y}) = \left(\frac{3}{8}, \frac{3\pi}{16}\right)$$

$$\#3. (i) \iint_{\text{domain}} f(x, y) dA = 1$$

$$(ii) P\left(X \geq \frac{1}{2}\right) = \frac{3}{4}$$

$$(iii) P\left(X \geq \frac{1}{2} \text{ AND } Y \leq \frac{1}{4}\right) = \frac{1}{16}$$

$$(iv) EV_x = \frac{2}{3}, \quad EV_y = \frac{2}{3}$$