Math 2471 Calc 3 - Homework #7

Pg. 976-7, #11, 15, 19, 21, 61, 63 and 65.
Pg. 987, #21, 23, and 23.
Pg. 988, #31, 33, and 35.
Pg. 995, #9, 11, 17, and 19.
Pg. 996, #35 and 37.
Pg. 1011, #3, 5, and 9

Pg. 976 Evaluate the following iterated integrals

$$\#11 \quad \int_0^1 \int_0^2 (x+y)\,dy\,dx$$

$$\#15 \quad \int_0^1 \int_0^{6x^2} x^3\,dy\,dx$$

$$\#19 \quad \int_0^1 \int_0^x \sqrt{1-x^2}\,dy\,dx$$

$$\#21 \quad \int_0^1 \int_0^{\sqrt{1-y^2}} (x+y)\,dx\,dy$$

Pg. 977 In the following, sketch the region of integration, change the order of integration and integrate

$$\#61 \quad \int_0^2 \int_x^2 \sqrt{1+y^2}\,dy\,dx$$

$$\#63 \quad \int_0^1 \int_{2x}^2 4e^{y^2}\,dy\,dx$$

$$\#65 \quad \int_0^1 \int_y^1 \sin x^2\,dx\,dy$$

Pg. 987 #21, 23, 25. Find the volume of the indicated solid using double integrals (you will need the book for these)

Pg. 988 Set up and evaluate the double integral to find the volume of the solid bounded by the following graphs

#31 $z = x + y,\ x^2 + y^2 = 4,$ first octant

#33 $y = 4 - x^2,\ z = 4 - x^2$

#35 $z = 4 - 2x,\ z = 4 - x^2 - y^2$ (the volume between the two surfaces)

Pg. 995 Evaluate the double integrals

$$\#9 \quad \int_0^{\pi} \int_0^{2\cos\theta} r\,dr\,d\theta \qquad\qquad \#11 \int_0^{2\pi} \int_0^1 6r^2 \sin\theta\,dr\,d\theta$$

Pg. 995 Evaluate the following by converting to polar coordinates

#17 $\int_0^3 \int_0^{\sqrt{9-y^2}} y\,dx\,dy$ #19 $\int_{-2}^{2} \int_0^{\sqrt{4-x^2}} (x^2+y^2)\,dy\,dx$

Pg. 996 Use a double integral in polar coordinates to find the volume of the solid bounded by the following graphs

#35 $z = \sqrt{x^2+y^2},\ z = 0,\ x^2+y^2 = 25$

#37 Inside the hemisphere $z = \sqrt{16-x^2-y^2}$ and inside the cylinder $x^2+y^2-4x = 0$

Pg. 1011 Find the surface area of the given graph $z = f(x,y)$ that lies in the given region R.

#3 $f(x,y) = 2x+2y$ R : triangle with vertices $(0,0),(4,0),(0,4)$

#5 $f(x,y) = 4+5x+6y,\ \ R = \{(x,y)|x^2+y^2 \leq 4\}$

#9 $f(x,y) = 9-x^2,\ R$: square with verticies $(0,0),(2,0),(0,2),(2,2)$.

Due: Monday, July 11, 2022.