

Iqra National University, Peshawar Department of Electrical Engineering



FINAL – ASSIGNMENT SPRING2020 Date:26/6/2020

Course Code:	MTH 102			Course Title:		Calculus and analytic geometry	
Prerequisite:				Instru	ctor:	HIMAYATULLAH	
Module:	3	Program:	BEE	Total Marks:	50	:	Mansoor Jadoon 16637

Note: Attempt all questions.PLO: program learning outcome C:Cognitive

Q1.	a							
\\ \varsigma_{1}.	a	. Estimate $\int \theta \sqrt[4]{1-\theta^2} d\theta$						
			PLO2 C2					
	b	-1	Marks 7					
	U	Estimate $\int_0^1 x^3 (1+x^4)^3 dx$ using substitution method.	PLO2					
			C2					
			C2					
Q2	(a)	Illustrate the centre and radius of the sphere $x^2 + y^2 + z^2 + 3x - 4z + 1$.	Marks 5					
			PLO1					
			C3					
	(b)	The region between the curve $y = \sqrt{x}$, $0 \le x \le 4$, and the x-axis is revolved about	Marks 4					
			PLO1					
		the x-axis to generate a solid. Apply the integration find the volume of solid.	C3					
Q3		70 A 04 A 4 5	Marks 9					
Q5		If $A = 2i - 4j + \sqrt{5}k$, and $B = -2i + 4j - \sqrt{5}k$ then illustrate the vector	Marks 9					
		$proje_A B$	PLO1					
			C3					
Q4		Find the area of the region between the graph and the x-axis	Marks 9					
		8 · 1	PLO1					
		Where $y = -x^2 + 5x - 4$, [0, 2].	C3					
		, , ,						
Q5	(a)	Estimate the angle between $A = i - 2j - 2k$ and $B = 6i + 3j + 2k$	Marks 5					
			PLO1					
			C3					
	(b)	Change into a spherical coordinate equation for the sphere $x^2 + y^2 +$	Marks 4					
		Change into a spherical coordinate equation for the sphere $x + y + y$	PLO1					
			C3					

$(z-1)^2 =$	= 1		PLO2 C2

QNO 1 (Pa)

Ans

Given

Solution

Let

1-02 = 4

alc

1-02 = d

alc

20 = dn

alc

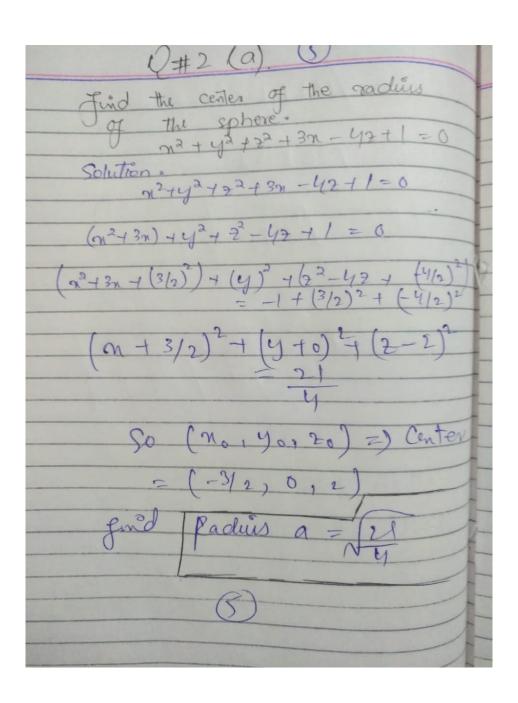
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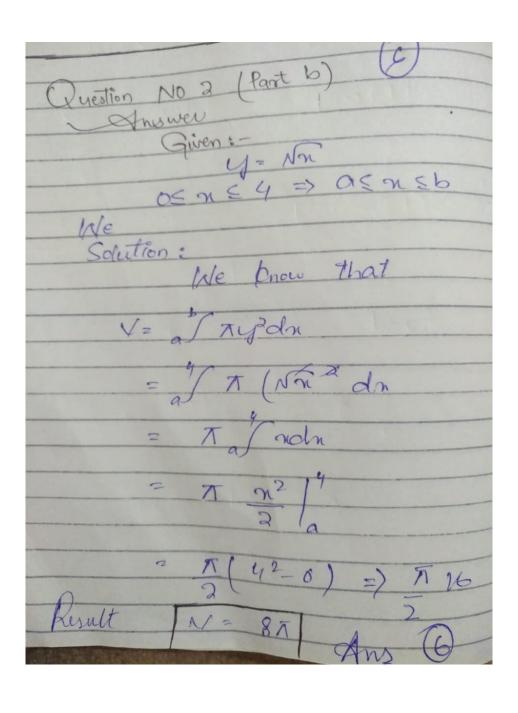
A Now (4) 1/4 0 (-1) du -1 (44 du 30 47 2 5 4514 4C by back substitution -2 (1-92)514

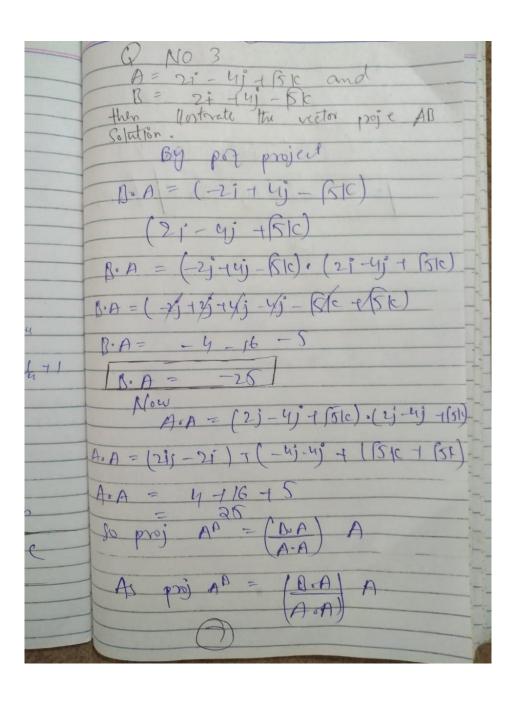
Q# 1 P(b): Ans:-5 m3 (1+ n9)3 dx Taking (1-4mi) = 4 applying d/dn b-s du = 4m3 @ du = yngdn 5/m3 (1 + mm)3

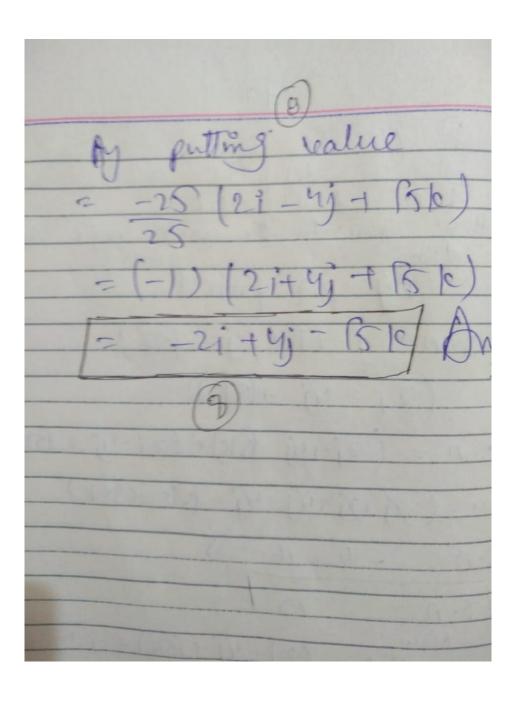
en em³dn zdet So u = (1+n9) Units gre

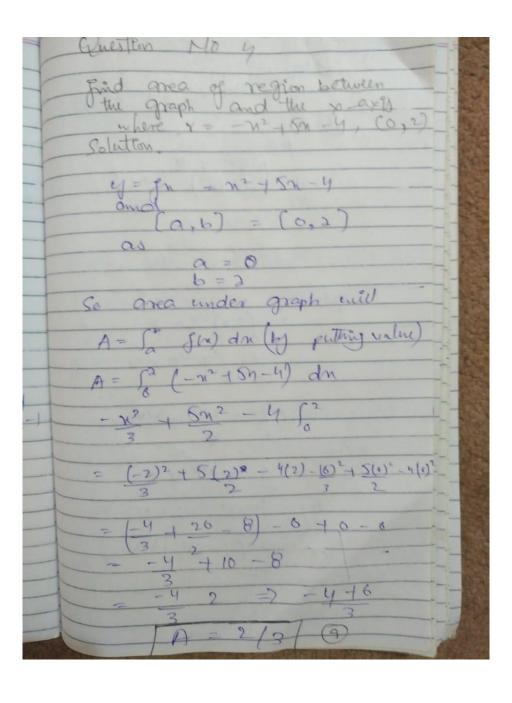
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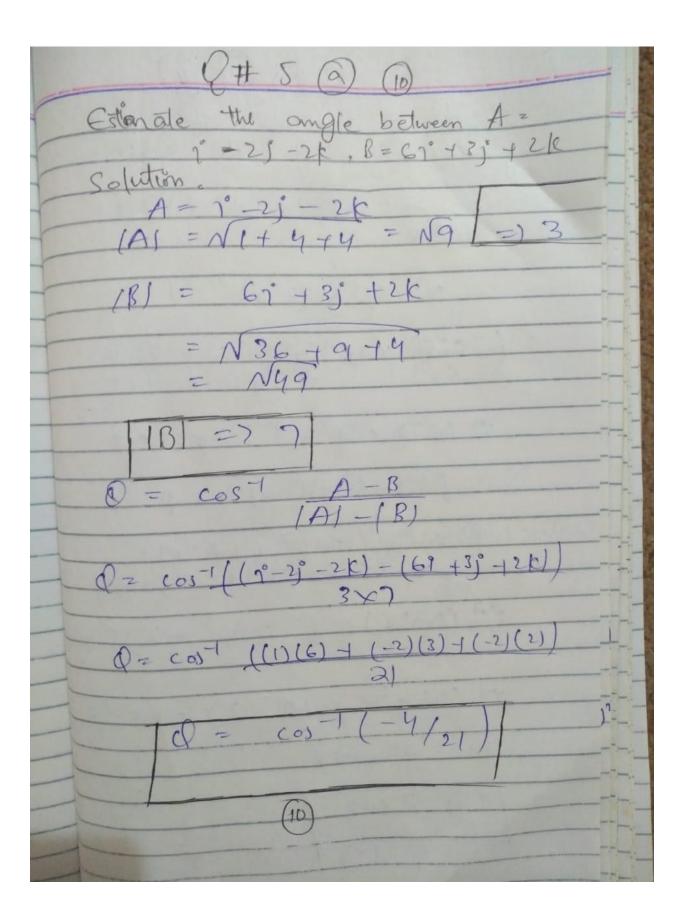












0#56/11 find a speriad coordinate equation for the sphere. Solution. n2+y2+(2-1)2=1 Jang cosp)2+ (1 and sin 4)2 + (9 cosp -1)2=1 promite cosp + Jani pring p 12 cos 62 - (1- 2) cos (p = 1 f 2 κm² φ (cos φ² + 8m² φ)

+ f² cos φ² + 1-2 g cos φ=/ pa (8m²φ) + j² cosφ² = 2 - J(0054 92 (sm p2+ cos20) -27 cos \$ = 6 p2 = 21 cos \$ 9=2000