Name: Okoli Shalom Chinedu

Level: 100l

Matric no.: 19/Mhs01/319

College: MHS

Department: MBBS

Course code: MAT 104

Assignment

1. ∫11 – 3x/x2 + 2x – 3dx = ∫11 – 3x/(x+3)(x- 1)dx

x2  + 2x -3

x2 + 3x – x – 3

x(x+3) – 1(x+3)

(x+3)(x- 1)

11 – 3x/(x+3)(x- 1) = A/x+3 + B/x- 1 = A(x- 1) + B(x+3)/(x+3)(x- 1)

11- 3x = A(x- 1) + B(x+3)

f(1) = 11- 3(1) = B(1+3)

11- 3 = 4B

8 = 4B

B = 2

f( -3) = 11- 3( -3) = A( -3 -1)

11+9 = -4A

20 = -4A

A = 20/-4

A = -5

11- 3x/(x+3)(x- 1) = -5/x+3 + 2/x- 1 = 2/x- 1 – 5/x+3

∫11- 3x/(x+3)(x- 1)dx = ∫2/(x- 1)dx - ∫5/(x+3)dx = 2∫1/(x- 1)dx - 5∫1/(x+3)dx

∫11- 3x/x2 + 2x – 3 = ∫11- 3x/(x+3) (x- 1) = 2In(x+3) – 5In(x- 1) + C

1. ∫4x – 16/x2 – 2x -3dx = ∫4x – 16/(x+1)(x- 3)dx

X2 – 2x -3

X2 – 3x + x – 3

x (x- 3) + 1(x- 3)

(x+1)(x- 3)

4x – 16/(x+1)(x- 3) = A/x+1 + B/x- 3 = A(x- 3) + B(x+1)/(x+1)(x- 3)

4x – 16 = A(x- 3) + B(x+1)

f ( -1) = 4( -1) – 16 = A( -1 – 3)

-4 – 16 = -4A

-20 = -4A

A = 5

f (3) = 4(3) – 16 = B(3+1)

12 – 16 = 4B

-4 = 4B

B = -1

4x – 16/(x+1)(x - 3) = 5/x+1 – 1/(x- 3)

∫4x – 16/(x+1)(x - 3) = 5∫1/(x+1) dx - ∫1/(x- 3) d

∫4x – 16/(x+1)(x - 3) = 5In(x+1) – In(x- 3) + C

1. ∫2x2  - 9x – 35/(x+1)(x- 2)(x+3)

2x2 – 9x -35/(x+1)(x- 2)(x+3) = A/(x+1) + B/(x- 2) + C/(x+3) = A(x- 2)(x+3) + B(x+1)(x+3) + C(x+1)(x- 2)/(x+1)(x- 2)(x+3)

2x2 – 9x – 35 = A(x- 2)(x+3) + B(x+1)(x+3) +C(x+1)(x- 2)

2x2 – 9x – 35 = A(x2 + x – 6) + B(x2 +4x + 3) +C(x2 – x – 2)

2x2 – 9x – 35 = Ax2 + Ax – 6A + Bx2 +4Bx + 3B + Cx2 – Cx – 2C

2x2 – 9x – 35 = (A + B + C) x2 + (A + 4B – C) x - 6A + 3B – 2C

A + B + C = 2 (1)

A + 4B – C = -9 (2)

6A – 3B +2C = 35 (3)

A + B + C = 2 (1)

A + 4B – C -9 (2)

2A + 5B = -7 (4)

A + 4B – C = -9 (2) \*2

6A – 3B + 2C = 35 (3) \*1

2A + 8B – 2C = -18

6A – 3B + 2C = 35

8A + 5B = 17 (5)

8A + 5B = 17 (5)

* 2A + 5B = -7 (4)

6A = 24

A = 4

8A + 5B = 17

8(4) + 5B = 17

32 + 5B = 17

5B = 17 – 32

5B = -15

B = -3

A + B + C = 2

4 – 3 + C = 2

1 + C = 2

C = 1

2x2  - 9x – 35/(x+1)(x – 2)(x+3) = 4/(x+1) + 1/(x+3) – 3/(x – 2)

∫2x2 – 9x – 35/(x+1)(x – 2)(x+3) = 4∫1/(x+1) + ∫1/(x+3) - 3∫1/(x – 2)

= 4In(x+1) + In(x+3) – 3 In(x – 2) + C