

September 2015

M	7	14	21	28	
T	1	8	15	22	29
W	2	9	16	23	30
T	3	10	17	24	
F	4	11	18	25	
S	5	12	19	26	
S	6	13	20	27	

October 2015

M	5	12	19	26	
T	6	13	20	27	
W	7	14	21	28	
T	1	8	15	22	29
F	2	9	16	23	30
S	3	10	17	24	31
S	4	11	18	25	

November 2015

M	30	2	9	16	23
T	3	10	17	24	
W	4	11	18	25	
T	5	12	19	26	
F	6	13	20	27	
S	7	14	21	28	
S	1	8	15	22	29

8.30

f(a) let $y = \frac{3x^4 - 2x^3 + 5}{x^3 + 1}$

9.00

diff b-s w-r-t x

$$\frac{dy}{dx} = \frac{(x^3+1) \frac{d}{dx}(3x^4-2x^3+5) - (3x^4-2x^3+5) \frac{d}{dx}(x^3+1)}{(x^3+1)^2}$$

$$= \frac{(x^3+1)(12x^3-6x^2) - (3x^4-2x^3+5)(3x^2)}{(x^3+1)^2}$$

$$= \frac{12x^6 - 6x^5 + 12x^3 - 6x^2 - 9x^6 + 6x^5 - 15x^2}{(x^3+1)^2}$$

$$= \frac{3x^6 + 12x^3 - 21x^2}{(x^3+1)^2}$$

Ans

M	6	13	20	27	4	11	18	25	T
W	7	14	21	28	5	12	19	26	W
T	1	8	15	22	9	13	20	27	T
F	2	9	16	23	10	14	21	28	F
S	3	10	17	24	11	15	22	29	S
S	4	11	18	25	12	16	23	30	S
S	5	12	19	26	13	17	24	31	S

1 Tuesday 24/12/21

8.00 am

Q1(b): let $y = \frac{(x^3+1)^2}{(x^3-1)}$

9.00

$y = \frac{x^6 + 2x^3 + 1}{(x^3-1)}$

9.30

10.00

10.30

now diff b.s w.r.t x^2

11.00

11.30

$\frac{dy}{dx} = \frac{(x^3-1) \frac{d}{dx}(x^6+2x^3+1) - (x^6+2x^3+1) \frac{d}{dx}(x^3-1)}{(x^3-1)^2}$

Noon

12.30

$= \frac{(x^3-1)(6x^5+6x^2) - (x^6+2x^3+1)(3x^2)}{(x^3-1)^2}$

1.00

1.30

$= \frac{6x^8 + 6x^5 - 6x^5 - 6x^2 = 6x^8 - 6x^2}{(x^3-1)^2}$

2.00

2.30

$\frac{dy}{dx} = \frac{3x^8 - 6x^2 - 9x^2}{(x^3-1)^2}$

Am

OCT 2015
 T 5 12 19 26
 W 6 13 20 27
 T 7 14 21 28
 F 8 15 22 29
 S 9 16 23 30
 S 10 17 24 31
 11 18 25

November 2015
 M 30
 T 1
 W 2
 T 3
 F 4
 S 5
 S 6
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December 2015
 M 1
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8.00 am

8.30 $\int \frac{1}{\sqrt{x}} dx$

9.00

9.30 $\Rightarrow \int (x^5)^{1/2} dx$

10.00

10.30 $\Rightarrow \int 5x^{5/2} dx$

11.00

By power formula of integration

11.30 $\Rightarrow \int x^{-5/2} dx$

Noon

$\Rightarrow \frac{x^{-5/2+1}}{-5/2+1} + C$

2.30

$\Rightarrow \frac{x^{-3/2}}{-3/2} + C$

3.00

$\Rightarrow \frac{-2/3 x^{-3/2} + C}{-3/2}$

0

31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
W	T	F	S	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

8.30 Q2(b) $\int \frac{1}{(8u+7)^8} du$

9.00 $\Rightarrow \int (8u+7)^{-8} du$

9.30 $\frac{1}{8} \times 4 \times 8$

10.00 $\frac{1}{8} \int (8u+7)^{-8} du$

10.30 $\Rightarrow \frac{1}{8} \frac{(8u+7)^{-8+1}}{-8+1} + C$

11.00 $\Rightarrow \frac{1}{8} \frac{(8u+7)^{-7}}{-7} + C$

11.30 $\Rightarrow \left(-\frac{1}{56} (8u+7)^{-7} + C \right) u$

By power rule of integration

October 2015

M	6	12	19	26
T	6	13	20	27
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T	1	8	15	22
F	2	9	16	23
S	3	10	17	24
S	4	11	18	25

November 2015

M	30	2	9	16	23
T	1	3	10	17	24
W	4	11	18	25	1
T	5	12	19	26	2
F	6	13	20	27	3
S	7	14	21	28	4
S	1	8	15	22	5

8.00 am $\int \frac{-x+9}{x^2-8x+6} dx$

9.30 Now $x^2-8x+6 = x^2-8x+2x+6$
 $= x(x-3) - 2(x-3)$
 $\Rightarrow (x-3)(x-2)$

∴ $\frac{-x+9}{(x-3)(x-2)}$ becomes

$\int \frac{(-x+9)}{(x-3)(x-2)} dx$

By p.f

$\frac{-x+9}{(x-3)(x-2)} = \frac{A}{x-3} + \frac{B}{x-2}$

∴ $-x+9 = A(x-2) + B(x-3)$ — (1)

put $x-3=0 \Rightarrow x=3$ and put in (1)

$-3+9 = A(3-2) + 0$

$3 \times 6 = \frac{A}{1} \Rightarrow A = 3 \times 6$
 $\frac{18}{1} = 18$

September
WEEK 36

5 Saturday 24/8/17

July 2015

M 6 13 20 27
T 7 14 21 28
W 1 8 15 22 29
T 2 9 16 23 30
F 3 10 17 24 31
S 4 11 18 25

August 2015

M 31 3 10 17 24
T 1 8 15 22 29
W 5 12 19 26
T 6 13 20 27
F 7 14 21 28
S 1 8 15 22 29

September 2015

M 7 14 21 28
T 1 8 15 22 29
W 5 12 19 26
T 6 13 20 27
F 7 14 21 28
S 1 8 15 22 29

October
M 5 12 19 26
T 6 13 20 27
W 1 8 15 22 29
T 2 9 16 23 30
F 3 10 17 24
S 4 11

part $9x-2=0$

$\Rightarrow x=2/9$ in (1)

$$-1+9 = A(0) + B(1-3)$$

$$48 = \frac{-2B}{-2}$$

$$\Rightarrow B = -48$$

Now put the values of

$A=2$ in (1), we get:

$$\frac{-x+9}{(x-3)(9x-2)} = \frac{3/2}{x-3} + \frac{-4}{9x-2}$$

$$\int \frac{-x+9}{9x^2-8x+6} dx = \int \frac{(-x+9)}{(x-3)(9x-2)} dx$$

$$= \frac{3}{2} \int \frac{1 dx}{x-3} - 2 \int \frac{2 dx}{9x-2}$$

$$= \left(\frac{3}{2} \ln |x-3| - 2 \ln |9x-2| \right) + C$$

July 2015							August 2015							September 2015						
M	6	13	20	27	M	31	3	10	17	24	M	7	14	21	28					
T	7	14	21	28	T	1	4	11	18	25	T	8	15	22	29					
W	8	15	22	29	W	2	5	12	19	26	W	9	16	23	30					
T	9	16	23	30	T	3	6	13	20	27	T	10	17	24						
F	10	17	24	31	F	4	7	14	21	28	F	11	18	25						
S	11	18	25		S	5	8	15	22	29	S	12	19	26						
S	12	19	26		S	6	9	16	23	30	S	13	20	27						

7 Monday 25/115

8.00 am

8.30

① $\Rightarrow C = -A$ put in (iii)

9.00

$$3A + 2B - A = 8$$

9.30

$$\Rightarrow A + B = 4 \quad \text{--- (vi)}$$

10.00

Solving (v) & (vi) we get

10.30

$$A - B = 2$$

11.00

$$A + B = 4$$

11.30

Add

$$2A = 6 \Rightarrow A = 3$$

Noon

12.30

(v) $\Rightarrow 3 + B = 4$
 $B = 1$

1.00

1.30

② $\Rightarrow 3 + C = 0$
 $C = -3$

2.00

2.30

$\Rightarrow D = -3B = -3(1) = -3$

putting the values of A, B, C & D in (*)

we get

$$\int \frac{(4x^2 + 8x) dx}{(x^2 + 1)(x^2 + 2x + 3)} = \int \frac{(3x + 1) dx}{x^2 + 1} + \int \frac{(-3x - 3) dx}{(x^2 + 2x + 3)}$$

September

WEEK 57

9 Wednesday 25/11/13

July 2015

M	0	13	20	27	
T	7	14	21	28	
W	1	8	15	22	29
T	2	9	16	23	30
F	3	10	17	24	31
S	4	11	18	25	
S	5	12	19	26	

August 2015

M	31	3	10	17	24
T		4	11	18	25
W		5	12	19	26
T		6	13	20	27
F		7	14	21	28
S	1	8	15	22	29
S	2	9	16	23	30

September 2015

M	7	14	21	28	
T	1	8	15	22	29
W	2	9	16	23	30
T	3	10	17	24	
F	4	11	18	25	
S	5	12	19	26	
S	6	13	20	27	

October 2015

M	5	12	
T	6	13	
W	7	14	
T	1	8	15
F	2	9	16
S	3	10	17
S	4	11	18

8.00 am

8.30

$$X + \begin{bmatrix} 3 & -1 \\ 2 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 1 \\ -3 & 1 \end{bmatrix}$$

9.00

9.30

$$\Rightarrow X = \begin{bmatrix} 5 & 1 \\ -3 & 1 \end{bmatrix} - \begin{bmatrix} 3 & -1 \\ 2 & 2 \end{bmatrix}$$

10.00

10.30

$$= \begin{bmatrix} 5-3 & 1+1 \\ -3-2 & 1-2 \end{bmatrix}$$

11.00

11.30

$$X = \begin{bmatrix} 2 & 2 \\ -5 & -1 \end{bmatrix}$$

Noon

12.30

1.00

1.30

$$\textcircled{b} X + \begin{bmatrix} -1 & 0 \\ 0 & 2 \end{bmatrix} = \begin{bmatrix} 2 & 6 \\ 1 & 5 \end{bmatrix} + \begin{bmatrix} -4 & -8 \\ -2 & 0 \end{bmatrix}$$

2.00

2.30

$$X + \begin{bmatrix} -1 & 0 \\ 0 & 2 \end{bmatrix} = \begin{bmatrix} -2 & -2 \\ -1 & 5 \end{bmatrix}$$

3.00

$$\Rightarrow X = \begin{bmatrix} -2 & -2 \\ -1 & 5 \end{bmatrix} - \begin{bmatrix} -1 & 0 \\ 0 & 2 \end{bmatrix}$$

$$X = \begin{bmatrix} -2+1 & -2-0 \\ -1-0 & 5-2 \end{bmatrix} = \begin{bmatrix} -1 & -2 \\ -1 & 3 \end{bmatrix}$$

8.00 am

8.30

9.00

9.30

10.00

10.30

11.00

11.30

Noon

12.30

1.00

1.30

2.00

2.30

3.00

3.30

4.00

4.30

5.00

6.00

2015
21 28
22 29
23 30
24
25
26
27

October 2015					November 2015					December 2015						
M	5	12	19	26	M	30	2	9	16	23	M	1	7	14	21	28
T	6	13	20	27	T	3	10	17	24	T	2	8	15	22	29	
W	7	14	21	28	W	4	11	18	25	W	3	9	16	23	30	
T	1	8	15	22	29	T	5	12	19	26	T	4	11	18	25	31
F	2	9	16	23	30	F	6	13	20	27	F	5	12	19	26	31
S	3	10	17	24	31	S	7	14	21	28	S	6	13	20	27	
S	4	11	18	25	S	1	8	15	22	29	S	7	14	21	28	

September
WEEK 37

253/112 Thursday 10

8.00 am

8.30

(c) $X + 2I = \begin{bmatrix} 3 & -1 \\ 1 & 2 \end{bmatrix}$

9.00

$$X = \begin{bmatrix} 3 & -1 \\ 1 & 2 \end{bmatrix} - 2I$$

9.30

$$= \begin{bmatrix} 3 & -1 \\ 1 & 2 \end{bmatrix} - 2 \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

10.00

10.30

11.00

$$X = \begin{bmatrix} 3 & -1 \\ 1 & 2 \end{bmatrix} - \begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$$

11.30

Noon

12.30

$$X = \begin{bmatrix} 3-2 & -1-0 \\ 1-0 & 2-2 \end{bmatrix}$$

1.00

1.30

$$= \begin{bmatrix} 1 & -1 \\ 1 & 0 \end{bmatrix}$$

2.00

2.30

3.00

Q5
(a) $A = \begin{bmatrix} 1 & 4 \\ 2 & 1 \end{bmatrix}$, $B = \begin{bmatrix} -3 & 2 \\ 4 & 0 \end{bmatrix}$, $C = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}$

3.30

Now $A^2 + BC$

4.00

$$= \begin{bmatrix} 1 & 4 \\ 2 & 1 \end{bmatrix} \begin{bmatrix} 1 & 4 \\ 2 & 1 \end{bmatrix} + \begin{bmatrix} -3 & 2 \\ 4 & 0 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}$$

4.30

$$= \begin{bmatrix} 1+8 & 4+4 \\ 2+2 & 8+1 \end{bmatrix} + \begin{bmatrix} -3+0 & 0+4 \\ 4+0 & 0+0 \end{bmatrix}$$

5.00

September

WEEK 37

July 2015

M	6	13	20	27	
T	7	14	21	28	
W	1	8	15	22	29
T	2	9	16	23	30
F	3	10	17	24	31
S	4	11	18	25	
S	5	12	19	26	

August 2015

M	31	3	10	17	24
T		4	11	18	25
W		5	12	19	26
T		6	13	20	27
F		7	14	21	28
S	1	8	15	22	29
S	2	9	16	23	30

September 2015

M		7	14	21	28
T	1	8	15	22	29
W	2	9	16	23	30
T	3	10	17	24	
F	4	11	18	25	
S	5	12	19	26	
S	6	13	20	27	

11 Friday 254/111

8.00 am

$$2 \begin{bmatrix} 9 & 8 \\ 4 & 9 \end{bmatrix} + \begin{bmatrix} -3 & 4 \\ 4 & 0 \end{bmatrix}$$

8.30

9.00

$$2 \begin{bmatrix} 9-3 & 8+4 \\ 4+4 & 9+0 \end{bmatrix} = \begin{bmatrix} 6 & 12 \\ 8 & 9 \end{bmatrix}$$

$$\Rightarrow A + BC = \begin{bmatrix} 6 & 12 \\ 8 & 9 \end{bmatrix} \rightarrow A$$