**MATH**

**PAGEMAKER10**

**Determinant**

Q1. If Sr = , then the value of is

(a) 0

(b)

(c) (

(d) (

(e)

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

Q2. If = k(a+b+c)( then k is

(a) 1

(b) 2

(c) –1

(d) –2

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

Q3. The value of is

(a)

(b)

(c)

(d) none

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

Q4. If a and then is

(a) 3

(b) 2

(c) 1

(d) 0

L1Difficulty1

Qtag Mathematics

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Q5. The value of x from the equation = 0 is

(a) 0 and –(

(b) 0 and (

(c) 1 and (

(d) 0 and ()

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

Q6. If n 3k, and 1, w, w2 are the cube roots of unity then has the value

(a) 0

(b) w

(c) w2

(d) 1

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

Q7. In a ABC, if = 0 then Sin2A + Sin2B + Sin2C is

(a)

(b)

(c)

(d)

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

Q8. For positive numbers, x, y, z the numerical value of the determinant is

(a) 0

(b) 1

(c) log xyz

(d) none

L1Difficulty1

Qtag Mathematics

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Q9. If |A| denotes the value of the determinant of the square matrix A of order 3 then
|–2A| is

(a) –8|A|

(b) 8|A|

(c) –2|A|

(d) none

L1Difficulty1

Qtag Mathematics

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Q10. l, m, n are the pth, qth, rth term of a G.P. all positive then equals

(a) –1

(b) 2

(c) 1

(d) 0

L1Difficulty1

Qtag Mathematics

Qcreator Pagemaker10

**Solutions**

S1. Ans. (d)

Sol.

=

=

=

S2. Ans. (c)

Sol.

 = a(bc –

=

=

=

k = –1

S3. Ans. (b)

Sol.

=

=

=

S4. Ans. (b)

Sol.

 = 0

applying R2 R2 – R1

 = 0

applying R2 R2 – R1 and R3 R3 – R1

 = 0

 = 0

S5. Ans. (a)

Sol.

 = 0

C1 C1 + (C2 + C3)

= (x+) = 0

R2 R2 – R1, R­3 R3 – R1

= (x+) = 0

= x2(x+)

x = 0, x = –()

S6. Ans. (a)

Sol.

= = 0

S7. Ans. (a)

Sol.

 = 0

a2+b2+c2

2a2+2b2+2c2

 equilateral triangle

Sin260 + Sin260 + Sin260

= 3 =

S8. Ans. (a)

Sol.

(

= ) +

= 0

S9. Ans. (a)

Sol.

If A is square matrix of order 3 then =

S10. Ans. (d)

Sol.

Let A is first term and r is common ratio

 = A.

log = log A + log R

m = A. log m = log A +

n = log n = log A + log R

( respectively and adding we get

log

 = 0

**Matrix**

Q1. If A in a matrix of order 3 and |A|=8, then |ajA| is

(a) 1

(b) 2

(c) 23

(d) 26

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q2. If A = then A2 is

(a)

(b)

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q3. The rank of the matrix is

(a) 1 if a = 6

(b) 2 if a = 1

(c) 3 if a = 2

(d) –1 if a = +6

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q4. If A = and I is a unit matrix of 3rd order then (A2 + aI) is

(a) 2A

(b) 4A

(c) 6A

(d) none

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q5. If A = then AA' is

(a)

(b)

(c)

(d) none

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q6. If A = and I is the identy matrix of order2 then (A – 2I)(A – 3I) is

(a) I

(b) 0

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q7. If A, B, C are three square matrix such that AB = AC implies B = C, then the matrix A is always a/an

(a) singular matrix

(b) non-singular matrix

(c) orthogonal matrix

(d) diagonal matrix

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q8. If A is square matrix A + AT is symmetric matrix then A – AT =

(a) unit matrix

(b) symmetric matrix

(c) skew symmetric matrix

(d) zero matrix

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q9. The matrix A =

(a) Unitary

(b) Orthogonal

(c) Nilpotent

(d) Involuntary

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q10. If matrix A = and A–1 = adjA then k is

(a) 7

(b) –7

(c)

(d) 11

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

**Solutions**

S1. Ans. (d)

Sol.

jA

=

S2. Ans. (c)

Sol.

A2 =

=

S3. Ans. (b)

Sol.

A =

=

a = 1 p(A) = 2

S4. Ans. (d)

Sol.

A =

A2 =

I =

A2 + =

S5. Ans. (c)

Sol.

A’ =

therefore AA’ =

=

S6. Ans. (b)

Sol.

(A – 2I) (A – 3I)

 = = 0

S7. Ans. (b)

Sol.

AB = AC B = C

if A–1 exists A is non singular

S8. Ans. (c)

Sol.

It is properly that if A is a square matrix, then A + AT, AAT, ATA are symmetric matrixes while A – AT is skew – symmetric matrix

S9. Ans. (c)

Sol.

A2 = AA

= = 0

S10. Ans. (d)

Sol.

k = |A|

|A| = = 11

**Trigonometrial Equation**

Q1. General solution of Sin x + Cos x = min a IR {1, a2 – 4a + 6} is

(a) + (–1)n

(b) + (–1)n

(c) + (–1)n+1

(d) + (–1)n

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q2. Sin2then the most general value of is

(a) 2n (–1)n

(b) (–1)n

(c) n

(d) 2n

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q3. If Cos + Sin = then the most geral value of is

(a) n + (–1)n

(b) (–1)n

(c) n

(d) n

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q4. 2 tan2 = Sec2 then the general value of is

(a) n

(b) n

(c) n

(d) 2n

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q5. p = Sin2 + Cos2 then

(a) p

(b) p

(c) 2 p 3

(d) p

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q6. Cos 2x + k Sin x = 2k – 7 has a solution for

(a) k < 3

(b) k < 2

(c) k > 3

(d) 2 < k < 6

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q7. If tan m = tan n, then the general value of will be in

(a) A.P

(b) G.P

(c) H.P

(d) none

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q8. If Cos 2 = ( then the value of is

(a) 2n +

(b) 2n

(c) 2n

(d) none

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q9. If tan + tan 2 + tan 3 = tan.tan 2 tan then the general value of is

(a) n

(b)

(c) n

(d)

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q10. General value of if tan + tan = 2 is

(a) n

(b) n

(c) 2n

(d) n (

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

**Solutions**

S1. Ans. (d)

Sol.

Sin x + Cos x = 

Here

(

Sin x + Cos x = 1

 Sin x + Cos x =

Sin = = Sin

x = x + (–1

S2. Ans. (c)

Sol.

Sin2

S3. Ans. (d)

Sol.

 Cos + Sin =

Sin = Sin

 = n + (n

S4. Ans. (c)

Sol.

2 tan2 = tan2

tan

S5. Ans. (a)

Sol.

p = Sin2 (1

p =

0

S6. Ans. (d)

Sol.

2Sin2x

Sin x =

–1 < < 1

2 < k < 6

S7. Ans. (a)

Sol.

tan m = tan n

mp = p

 =

Hence different values of are in A.P with as common difference

S8. Ans. (b)

Sol.

2Cos2

Cos = +1 ±

Cos = Cos

 = 2n ±

S9. Ans. (b)

Sol.

tan + tan2 + tan3 = tan

tan6

6 = n

S10. Ans. (b)

Sol.

tan ± =2

tan=1

 ±