TS EAMCET Mathematics Previous Questions with Key – Test 4

1) If f: [1, ∞) → [5, ∞) is given by $f(x) = 3x + \frac{2}{x}$, Then $f^{-1}(x)$ =

1) $\frac{1}{6}\left[x + \sqrt{x^2 - 24}\right]$

2) $\frac{x}{3x^2 + 2}$

3) $\frac{1}{6}\left[x - \sqrt{x^2 - 24}\right]$

4) $\frac{1}{2}\left[1 + \sqrt{x^2 - 4}\right]$

2)The domain of $f(x) = \log\left[(2.5)^{3-x^2} - (0.4)^{x+9}\right]$ is

1)(-4, 3) 2)(-3, 4) 3)(3, 4) 4)(0, ∞)

3)Let n∈N which one of the following is true.

1)$47^n + 16n - 1$ is divisible by 4 2) $2(4^{2n+1}) - 3^{3n+1}$ is divisible by 9

3) $4^n - 3n - 1$ is divisible by 11 4) $3(5^{2n+1}) + 2^{3n+1}$ is divisible by 17

4) $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ then A^{-1} =

1)4I - A

2) A-4I

3) $\frac{1}{5}(A - 4I)$

4) $\frac{1}{5}(4I - A)$

5)If x, y are any two non-zero real numbers, a_{ij} = xj + yi, A=$(a_{ij})_{n\times n}$ and P, Q are two n×n matrices such that A = xP + yQ then

1)P is singular and Q is non-singular

2)P+Q is symmetric and P-Q is skew symmetric

3)Both P+Q and P-Q are singular

4)Both P+Q and P-Q are non singular

6) If the system $\begin{bmatrix} 2 & 8 \\ 3 & 7 \end{bmatrix}\begin{bmatrix} a \\ b \end{bmatrix} = k\begin{bmatrix} a \\ b \end{bmatrix}$ has nontrivial solution then the positive value of k and a solution of the system for that value of k are

1) $9, \begin{bmatrix} 3 \\ -8 \end{bmatrix}$

2) $10, \begin{bmatrix} -8 \\ 3 \end{bmatrix}$

3) $6, \begin{bmatrix} -1 \\ -1 \end{bmatrix}$

4) $10, \begin{bmatrix} 1 \\ 1 \end{bmatrix}$

7) The modulus – amplitude form of $\frac{(1-i)^3(2-i)}{(2+i)(1+i)}$ is

1) $2cis\left(\pi - Tan^{-1}\frac{4}{3}\right)$

2) $2cis\left(-Tan^{-1}\frac{4}{3}\right)$

3) $2cis\left(-\pi + Tan^{-1}\frac{4}{3}\right)$

4) $2cis\left(Tan^{-1}\frac{4}{3}\right)$

8)If z_1 = 2-3i and z_2 = -1+i, then the locus of a point P represented by z= x+iy in the Argand plane satisfying the equation $\text{Arg}\left(\frac{z-z_1}{z-z_2}\right)=\frac{\pi}{2}$ is

1) $x^2 + y^2 - x + 2y - 5 = 0$

2) $x^2 + y^2 - x + 2y - 5 = 0$ and $4x + 3y + 1 < 0$

3) $4x + 3y + 1 < 0$ and $x^2 + y^2 - x + 2y - 5 > 0$

4) $x^2 + y^2 - x + 2y - 5 = 0$ and $4x + 3y + 1 > 0$

9) $\left(\frac{1+\cos\frac{\pi}{8}-i\sin\frac{\pi}{8}}{1+\cos\frac{\pi}{8}+i\sin\frac{\pi}{8}}\right)^{12}$

1)-1

2)i

3)-i

4)2

10)If the complex number a is such that |a| = 1, and arg(a) = θ then the roots of the equation $\left(\frac{1+iz}{1-iz}\right)^4 = a$ are z=

1) $\tan\left(\frac{2k\pi+\theta}{4}\right), k=0,1,2,3$

2) $\tan\left(\frac{k\pi+\theta}{8}\right), k=0,1,2,3$

3) $\tan\left(\frac{3k\pi+\theta}{4}\right), k=0,1,2,3$

4) $\tan\left(\frac{2k\pi+\theta}{8}\right), k=0,1,2,3$

11)If $x^2 + 2px - 2p + 8 > 0$ for all real values of x, then the set of all possible values of p is

1)(2, 4)

2)(-∞, -4)

3)(2, ∞)

4)(-4, 2)

12)If the roots of the equation $(p-3)x^2 + 2(p-3)x + 2p - 5 = 0$ are real and distinct for $\alpha < p < \beta$ and $(\beta - \alpha)$ is maximum, then the extreme value of the quadratic expression $-(\alpha+\beta)x^2 + \alpha\beta x + (\alpha-\beta)$ is

1) $-\frac{4}{5}$

2) 5

3)-1

4) $\frac{4}{5}$

13)If the equation $x^3 - 7x^2 + 14x - 8 = 0$ is transformed to $y^3 + py - \frac{20}{27} = 0$ when its roots are diminished by k, then p =

1) $\frac{8}{3}$

2) $\frac{7}{3}$

3) $\frac{-7}{3}$

4) $\frac{-8}{3}$

14)If one root of the equation $x^3 - 9x^2 + 26x - 24 = 0$ is twice the other then the sum of the cubes of those two roots is

1)74

2)253

3)9

4) $\frac{9}{64}$

15)There are 10 points in a plane of which no three points are collinear except 4. Then, the number of distinct triangles that can be formed by joining these points such that atleast one of the vertices of every triangle formed is from the given 4 collinear points is

1)116

2)96

3)120

4)100

16)The number of ways of arranging 8 boys and 8 girls in a row so that boys and girls sit alternately is

1)9! 2)(9!)(8!) 3)$(8!)^2$ 4) $2!(8!)^2$

17)If the coefficients of $(2\alpha + 4)^{th}$ and $(\alpha - 2)^{th}$ terms in the expansion $(1+x)^{2019}$ are equal, then α =

1)673

2) 674

3) 675

4) 676

18)If n is a positive integer then the coefficient of x^6 in the expansion of $(1-2x + 3x^2 - 4x^3 + \ldots)^{-n}$ is

1) $(2n)C_4$

2) nC_{12}

3) $(2n)C_6$

4) nC_6

19) $\frac{d}{dx}\left(\frac{x+5}{(x+1)^2(x+2)}\right)=$

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

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

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

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

20)If the period of the function f(x)= sin5x cos3x is α then cosα=

1)1 2) $\frac{1}{\sqrt{2}}$ 3) $-\frac{1}{2}$ 4) -1

21)If $\cos\frac{\pi}{15}\cos\frac{2\pi}{15}\cos\frac{4\pi}{15}\cos\frac{7\pi}{15}\cos\frac{30\pi}{15}=x$, then $\frac{1}{8x}=$

1)4

2)¼

3)8

4)$\frac{4}{3}$

22)If A + B + C = 2S, then

Sin (S – A) + sin (s-b) – sin C =

1) $-4\sin\frac{S-A}{2}\sin\frac{S-B}{2}\sin\frac{C}{2}$

2) $4\sin\frac{S-A}{2}\sin\frac{S-B}{2}\sin\frac{C}{2}$

3) $-4\sin\frac{S-A}{2}\sin\frac{S-B}{2}\cos\frac{C}{2}$

4) $4\sin\frac{S-A}{2}\sin\frac{S-B}{2}\cos\frac{C}{2}$

23)When a is irrational, the number of solutions satisfying the equation $1 + \sin^2 ax = \cos x$ is

1)1

2)0

3)2

4)Infinite

24) $\text{Tan}^{-1}\left(\frac{1}{2\sqrt{2}}\right)+\text{Sin}^{-1}\left(\frac{1}{\sqrt{3}}\right)=\text{Cos}^{-1}x$, then x =

1) $\frac{1}{\sqrt{3}}$

2) $\frac{1}{\sqrt{2}}$

3) $\frac{2}{\sqrt{3}}$

4) $\frac{1}{2\sqrt{2}}$

25)$\coth^{-1}3 + \tanh^{-1}\frac{1}{3} - \text{cosech}^{-1}(-\sqrt{3}) =$

1)$\log\left(\frac{2}{\sqrt{3}}\right)$

2)$\log 2\sqrt{3}$

3)0

4)$\log 3\sqrt{3}$

26)In any triangle, if the angles are in the ratio 1 : 2 : 3, then their corresponding sides are in the ratio

1)$1 : \sqrt{2} : 1$

2)$1 : \sqrt{3} : 2$

3)$1 : \sqrt{3} : 1$

4)$1 : 1 : \sqrt{2}$

27)Two ships leave a port from a point at the same time. One goes with a velocity of 3 kmph along North-East making an angle of 45° with East direction and the other travels with a velocity of 4 kmph along South-East making angle of 15° with East direction. Then the distance between the ships at the end of two hours is]

1)$2\sqrt{13}$ 2)$\sqrt{13}$ 3)5 4)10

28)In ΔABC, $r_1 + r_2 + r_3 =$

1)4R

2)4R +r

3)4R –r

4)$4R + s^2$

29)In a quadrilateral PQRS, A divides SR in the ratio 1 : 3 and B is the midpoint of PR. If, $3\underline{SR}-\underline{QR}-3\underline{PS}-\underline{PQ}=k\underline{AB}$, then k =

1)2

2)4

3)6

4)8

30)It is given $\underline{a},\underline{b},\underline{c}$ are vectors of lengths 6, 8, 10 respectively, If $\underline{a}$ is perpendicular to $(\underline{b}+\underline{c}),\underline{b}$ is perpendicular $(\underline{c}+\underline{a})$; and $\underline{c}$ is perpendicular to $(\underline{a}+\underline{b})$, then the length of the vector $\underline{a}+\underline{b}+\underline{c}$ is

1)6√2

2)12√2

3)5√2

4)10√2

31)If the direction cosines of two lines are given buy l + 3m + 5n = 0 and 5lm – 2mn + 6mn + 6ln = 0, then the angle between the line is

1) $Cos^{-1}\left(\frac{1}{6}\right)$

2) $Cos^{-1}\left(\frac{1}{3}\right)$

3) $Cos^{-1}\left(\frac{1}{5}\right)$

4) $Cos^{-1}\left(\frac{1}{6}\right)$

32)If $\bar{a}, \bar{b}, \bar{c}, \bar{d}$ are 4 vectors such that $\bar{a}.\bar{b} = 0, |\bar{a} \times \bar{c}| = |\bar{a}||\bar{c}|, |\bar{a} \times \bar{d}| = |\bar{a}||\bar{d}|$, then $[\bar{b}\bar{c}\bar{d}] =$

1)$|\bar{a}||\bar{b}||\bar{c}|$

2)$|\bar{b}||\bar{c}||\bar{d}|$

3)$\frac{1}{6}$

4)0

33)If $\bar{a}, \bar{b}, \bar{c}$ are three non coplanar vectors and $\bar{d}$ any unit vector, then $|(\bar{a}, \bar{d})(\bar{b} \times \bar{c}) + (\bar{b}.\bar{d})(\bar{c} \times \bar{a}) + (\bar{c}.\bar{d})(\bar{a} \times \bar{b})| =$

1) $2|[\bar{a}\bar{b}\bar{c}]|$

2) $\frac{1}{2}|[\bar{a}\bar{b}\bar{c}]|$

3) $|[\bar{a}\bar{b}\bar{c}]|$

4) $\frac{1}{6}|[\bar{a}\bar{b}\bar{c}]|$

34)If the line $\bar{r} = \bar{a} + t\bar{b}$ is parallel to the plane $\bar{r} = \bar{c} + l\bar{d} + m\bar{e}$, then

1) $[\bar{a}\bar{b}\bar{c}] = 0$

2) $[\bar{b}\bar{c}\bar{d}] = 0$

3) $[\bar{c}\bar{d}\bar{e}] = 0$

4) $[\bar{b}\bar{d}\bar{e}] = 0$

35)The mean deviation about the mean for the following data is

x_i:	2	4	5	7	9
f_i:	2	4	10	8	6

1)6.3

2)1.5

3)2.83

4)1.733

36)If the coefficients of variation of two distributions are 40 and 20 and their variances are 144 and 164 respectively, then the mean of their arithmetic means is

1)40

2)12

3)30

4)35

37)A number n is chosen at random from the natural numbers 2 to 1001. The probability that n is number that leaves remainder 1 when divided by 7, is

1)$\frac{73}{500}$

2)$\frac{71}{1000}$

3)$\frac{143}{1000}$

4)$\frac{71}{500}$

38)If A and B are two independent event such that $P(B)=\frac{2}{7}$ and $P(A\cup B^c)=0.8$ then $P(A\cup B)=$

1)$\frac{29}{35}$

2)$\frac{39}{70}$

3)$\frac{1}{2}$

4)$\frac{41}{105}$

39)In a certain recruitment test with multiple choice, there are four options to teach question. Out of which only one is correct. An intelligent student knows 90% of the correct answer while a weak student knows only 20% of the correct answers. If a weak student gets the correct answer, the probability that he was guessing is

1)0.03

2)0.27

3)0.40

4)0.50

40)If the mean and variance of a Binomial variable X are $\frac{5}{2}$ and $\frac{5}{4}$ respectively, then P(X > 1) =

1)$\frac{3}{16}$

2)$\frac{11}{16}$

3)$\frac{13}{16}$

4)$\frac{15}{16}$

41)If a random variable X follows a Poisson distribution such that P (X = 1) = 3P (X = 2), the P (X = 3) =

1)$\frac{4}{81}e^{-\frac{2}{3}}$ 2)$\frac{2}{81}e^{-\frac{2}{3}}$

3)$\frac{2}{27}e^{-\frac{2}{3}}$ 4)$\frac{4}{81}e^{-\frac{1}{3}}$

42)Let Q (x_1, y_1) be a variable point and R(1, 0) be a point on the circle $x^2 + y^2 = 1$ and P be the midpoint of QR. Then the locus of the point P is

1) $x^2 + y^2 - 2x = 0$

2) $x^2 + y^2 + x = 0$

3) $x^2 + y^2 + 2x = 0$

4) $x^2 + y^2 - x = 0$

43)The point P(3, 2) undergoes the following transformations successively

i)Reflection about the line y = x

ii)Translation to a distance of 3 units in the positive direction f x –axis

iii)Rotation through an angle $\frac{\pi}{4}$ about the origin in the counter-clockwise direction

Then, the final position of that points is

1)(2, 4)

2) $(4\sqrt{2}, -\sqrt{2})$

3) $\left(\frac{1}{\sqrt{2}}, \sqrt{2}\right)$

4) $(\sqrt{2}, 2\sqrt{2})$

44)The equation of the straight line which is perpendicular to the line 5x -2y = 7 and passing through the point of intersection of the lines 2x + 3y – 1= 0 and 3x + 4y – 6 = 0 is

1) $2x + 5y - 17 = 0$

2) $2x + 5y + 17 = 0$

3) $2x + 5y + 47 = 0$

4) $2x + 5y - 47 = 0$

45)The angle between the line joining the points (1, -2), (3, 2) and the line $x + 2y - 7 = 0$ is

1)0

2)$\frac{\pi}{4}$

3)$\frac{\pi}{2}$

4)π

46)The vertices of a triangle are A(1, 7), B(-5, -1) and C (-1, 2). Then, the equation of bisector of the $\angle ABC$ is

1)$x - y + 4 = 0$

2)$x + y + 4 = 0$

3)$2x - 3y + 6 = 0$

4)$x - 2y + 4 = 0$

47)Let $3x^2 + 8xy - 3y^2 = 0$ represent the lines L_1, L_2 and $3x^2 + 8xy - 3y^2 + 2x - 4y - 1 = 0$ represent the lines L_3, L_4. Let L be the line joining the points of intersection of L_1, L_3 and L_2, L_4. Then the area (in square units) of the triangle formed by L with the coordinate axes is

1)$\frac{1}{2}$ 2)$\frac{1}{4}$

3)$\frac{1}{8}$ 4)$\frac{1}{16}$

48)The equation of pair of lines passing through origin and forming an equilateral triangle with the line $3x + 4y - 5 = 0$ is

1)$39x^2 + 11y^2 - 96xy = 0$

2)$x^2 + y^2 - 4xy = 0$

3)$x^2 - 7xy + 12y^2 = 0$

4)$2x^2 + 6xy + y^2 = 0$

49)From a point A(1, 0) on the circle $x^2 + y^2 – 2x + 2y + 1 = 0$, a chord AB is drawn and it is extended to a point P such that AP = 3AB. The equation of the locus of P is

1)$x^2 + y^2 – 2x + 6y + 1 = 0$

2)$x^2 + y^2 – 2x + 4y + 1 = 0$

3)$x^2 + y^2 – 2x + 3y + 1 = 0$

4)$x^2 + y^2 – 2x + 3y + 1 = 0$

50)The tangent at A(-1, 2) on the circle x2 + y2 – 4x – 8y + 7 = 0 touches the circle $x^2 + y^2 + 4x + 6y = 0$ at B. Then a point of trisection of AB is

1)$\left(0,\frac{1}{3}\right)$ 2)$\left(-\frac{1}{3},1\right)$

3)$\left(\frac{2}{3},\frac{1}{3}\right)$ 4)(-1, -1)

51)If C_1 and C_2 are the centres of similitude with respect to the circles $x^2 + y^2 – 14x + 6y + 33 = 0$ and $x^2 + y^2 + 30x – 2y + 1= 0$ then the equation of the circle with C_1C_2 as diameter is

1)$2x^2 + 2y^2 + 30x – 33y – 17 = 0$ 2)$2x+2y^2 – 14x + 9y – 13 = 0$

3)$2x^2 + 2y^2 – 39x + 14y + 74 = 0$ 4)$2x^2 + 2y^2 – 24x + 8y – 15 = 0$

52)If tangents are drawn to the circle $x^2 + y^2 = 12$ at the points of intersection with the circle $x^2 + y^2 – 5x + 3y – 2 = 0$ then the ordinate of the point of intersection of these tangents is

1)$-\frac{18}{5}$

2)$-\frac{12}{5}$

3)$-\frac{9}{5}$

4)$-\frac{3}{5}$

53)From a point P on the line 4x – 3y = 6 two tangents are drawn to the circle $x^2 + y^2 - 6x - 4y + 4 = 0$. If the angle between these tangents is $\text{Tan}^{-1}\left(\frac{24}{7}\right)$, then P =

1) $\left(1, \frac{-2}{3}\right)$

2) $\left(2, \frac{2}{3}\right)$

3) $\left(-1, \frac{-10}{3}\right)$

4) (6, 6)

54)If (-1, -1) is the focus and x + y + 4 = 0 is the directrix of a parabola, then its vertex is

1) $\left(-\frac{3}{2}, -\frac{3}{2}\right)$

2) $\left(-\frac{5}{2}, -\frac{5}{2}\right)$

3) $\left(-\frac{1}{4}, -\frac{1}{4}\right)$

4) $\left(\frac{1}{4}, \frac{1}{4}\right)$

55)If a normal chord of a parabola $y^2 = 4ax$ subtends a right angle at the origin, then the slope of that normal chord is

1) ± 2

2) $\pm 2\sqrt{2}$

3) $\pm\frac{1}{\sqrt{2}}$

4) $\pm\sqrt{2}$

56)If origin is the centre, X-axis is the major axis and $\sqrt{\frac{2}{5}}$ is the eccentricity of an ellipse which passes through (-3, 1), then the equation of that ellipse is

1)$3x^2 + 5y^2 = 32$

2)$2x^2 + y^2 = 19$

3)$x2 + 23y^2 = 32$

4)$x^2 + 2y^2 = 11$

57)The slope of a common tangent to the ellipse $\frac{x^2}{49}+\frac{y^2}{4}=1$ and the circle $x^2 + y^2 = 16$ is

1)$\frac{5}{\sqrt{11}}$

2)$\frac{4}{\sqrt{11}}$

3)$\frac{3}{\sqrt{11}}$

4)$\frac{2}{\sqrt{11}}$

58)The distance between the tangents drawn to the hyperbola $3x^2 - y^2 = 3$, that are parallel to the line $y = 2x + 4$ is

1)$\frac{4}{\sqrt{5}}$

2)$\frac{2}{\sqrt{5}}$

3)$\frac{2}{3}$

4)1

59)If the distance between two points A and B is d, and the lengths of the projections of AB on the coordinate plane are d_1, d_2, d_3 then

1) $2d^2 = d_1^2 + d_2^2 + d_3^2$

2) $d_1 + d_2 + d_3 = 0$

3) $d_1^2 + d_2^2 + d_3^2 = d^2$

4) $d_1 + d_2 + d_3 = d$

60)L is a line passing through the point A(1, 0, -3) and parallel to a line having direction rations 0, 1, -2. P is a point on the line L which is at a minimum distance from the plane $2x + 3y + 5x = 1$. Then the equation of the plane through P and perpendicular to AP is

1) $y + 2x = 12$

2) $y - 2x + 4 = 0$

3) $x + y - 2x = 12$

4) $2y - z = 16$

61)Let π_1 be the plane passing through the points (0, 1, 2), (1, 0, -2), (-2, 1, 0) and π_2 be the plane passing through the point (1, 2, 3) and perpendicular to the planes $x + y + z = 1$ and $2x - 3y + z = 5$. If θ is the acute angle between the plane π_1 and π_2 then $\cos\theta$=

1) $\frac{\sqrt{14}}{9}$

2) $\frac{\pi}{3}$

3) $\frac{13}{3\sqrt{22}}$

4) $\frac{\pi}{4}$

62) $\lim_{x\to 0}\frac{\cos 4x-4\cos 2x+3}{x^4}=$

1)4

2)8

3)$\frac{1}{4}$

4)$\frac{1}{8}$

63) If $\alpha=\underset{x\to 0}{Lt}\frac{2.2^x}{1-\cos x}$ and $\beta=\underset{x\to 0}{Lt}\frac{x.2^x-x.}{\sqrt{1+x^2}-\sqrt{1-x^2}}$ then

1)$\alpha=\beta$

2)$\alpha=2\beta$

3)$\alpha=\frac{\beta}{2}$

4)$\alpha=3\beta$

64)If $f(x)=\frac{2x}{4+3|x|}, x\in r,$ then $f'(0)=$

1)0 2)¼

3)½ 4)¾

65)If f is a real function such that f(4) = 4 and f′(4) = 16, then $\lim_{x\to 4}\frac{\sqrt{f(x)}-2}{\sqrt{x}-2}=$

1)16

2)12

3)8

4)2

66)If $y = (\sin^{-1}2x)^2 + (\cos^{-1}2x)^2$, then $(1 - 4x^2)y_2 - 4xy_1 =$

1)0

2)4

3)16

4)12

67)Let $f(x) = x^3 + 2x^2 - x$ be a real valued function. Then the value of Lagrange’s constant C in (-1, 2) is

1) $\frac{-4+\sqrt{76}}{3}$

2) $\frac{-2+\sqrt{19}}{3}$

3) $\frac{-4+\sqrt{19}}{6}$

4) $\frac{-2+\sqrt{19}}{6}$

68)On $\subset$ R – {-1, 1}, $\int \mathrm{Tan}^{-1}\left(\frac{2x}{1-x^2}\right)dx =$

1) $2x\mathrm{Tan}^{-1}\left(\frac{2x}{1-x^2}\right) + \log(1+x^2) + c$

2) $x\mathrm{Tan}^{-1}\left(\frac{2x}{1-x^2}\right) - \log(1-x^2) + c$

3) $x\mathrm{Tan}^{-1}\left(\frac{2x}{1-x^2}\right) - \log(1+x^2) + c$

4) $x^2\mathrm{Tan}^{-1}\left(\frac{x}{1-x^2}\right) + \log(1-x^2) + c$

69)The angle between the curves $y = \sin 2x$ and $y = \cos 2x$ is

1)$Tan^{-1}\sqrt{2}$

2)$Tan^{-1}2\sqrt{2}$

3)$Tan^{-1}\left(\frac{1}{\sqrt{2}}\right)$

4)$Tan^{-1}\left(\frac{1}{2\sqrt{2}}\right)$

70)The ratio between the length of sub tangent at any point other than origin on the parabola $y^2 = 16ax$ and the abscissa of that point is

1)1 : 3 2)1 : 4

3)1 : 2 4)2 : 1

71) $\int \frac{dx}{\sqrt{(x-1)(x-2)}} =$

1)$\sin^{-1}(2x + 5) + c$ 2)$\sinh^{-1}(2x - 5) + c$

3)$\cosh^{-1}(2x - 3) + c$ 4)$\sin^{-1}(3-2x) + c$

72)If $\int \frac{x^4+1}{x^6} dx = ATan^{-1}x + BTan^{-1}x^3 + c$, then (A, B) =

1)$\left(1, \frac{1}{3}\right)$

2)$\left(1, \frac{1}{4}\right)$

3)$\left(1, \frac{1}{6}\right)$

4)$\left(1, \frac{4}{3}\right)$

73)If $\int x(1+x)\log(1+x^2)dx = F(x)\log(1+x^2) - \frac{2}{3}\text{Tan}^{-1}x - \frac{2x^3}{9} - \frac{x^2}{2} + \frac{2x}{3} + c$, then F(x) =

1) $\frac{x^2}{2} + \frac{x^3}{3}$

2) $\frac{x^2}{2} + \frac{x^3}{3} - \frac{1}{3}$

3) $\frac{x^2}{2} + \frac{x^3}{3} + \frac{1}{2}$

4) $\frac{x^2}{2} + \frac{x^3}{3} - \frac{2}{3}$

74)If $I_n = \int \cos^n x\,dx$, then $6I_6 - 5I_4 =$

1) $-\cos^5 x \sin^2 x$

2) $\cos^6 x \sin^2 x$

3) $\cos^3 x \sin^2 x$

4) $\cos^5 x \sin x$

75)If $f(x) = \frac{|\log x|}{x^2}$, then $\int_{\frac{1}{e}}^{e} f(x)dx =$

1) e

2) $1 - \frac{1}{e}$

3) $e^2\left(1 - \frac{1}{e}\right)$

4) $2\left(1 - \frac{1}{e}\right)$

76)The area enclosed by the curves $y = 8x - x^2$ and $8x - 4y + 11 = 0$ is

1) $\frac{125}{6}$ 2) $\frac{32}{3}$

2 3)36 4) $\frac{9}{2}$

77)If $I = \int_0^{\pi/2} \frac{dx}{5 + 3\sin x} = \lambda \text{Tan}^{-1}\left(\frac{1}{2}\right)$, then $\lambda =$

1)¼ 2)1

3)½ 4) $\frac{1}{3}$

78)The general solution of the differential equation $\left(\frac{1}{x^2} + x\right)\frac{dy}{dx} + 3y = 1$ is

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

3) $\log y - xy = c$ 4) $(1 + x^3)y = x^3 + c$

79)A family of curves whose equation is general solution of a differential equation having order 1 and degree 3, is

1) $x^2 + y^2 + 2gx + 4y + 2 = 0$ 2) $x^2 = a^2 (1 + y^2)$

3) $y^2 = 2c(x + \sqrt{c})$ 4) $y^2 = 4ax$

80)The general solution of the differential equation $\frac{dy}{dx} = \frac{1}{x + y + 1}$ is

(k, c are arbitrary constants)

1) $y = \log_e\left(\frac{x + y + 2}{k}\right)$ 2) $x = \log_e\left(\frac{x + y + 2}{k}\right)$

3) $x = ce^y + y + 2$ 4) $y = ce^x + x + 2$

1	1	41	1
2	2	42	4
3	4	43	2
4	3	44	2
5	2	45	3
6	4	46	1
7	1	47	4
8	4	48	1
9	2	49	1
10	4	50	2
11	4	51	3
12	4	52	1
13	3	53	4
14	1	54	1
15	2	55	4
16	4	56	1
17	1	57	4
18	3	58	2
19	2	59	1
20	4	60	2
21	1	61	1
22	2	62	2
23	1	63	2
24	1	64	3
25	2	65	1
26	2	66	3
27	1	67	2
28	2	68	3
29	4	69	2
30	4	70	4
31	1	71	3
32	4	72	1
33	3	73	3
34	4	74	4
35	4	75	4
36	4	76	1
37	4	77	3
38	3	78	2
39	4	79	3
40	3	80	1