



MATHS

BOOKS - OSWAAL PUBLICATION MATHS (KANNADA ENGLISH)

II PUC JULY -2016

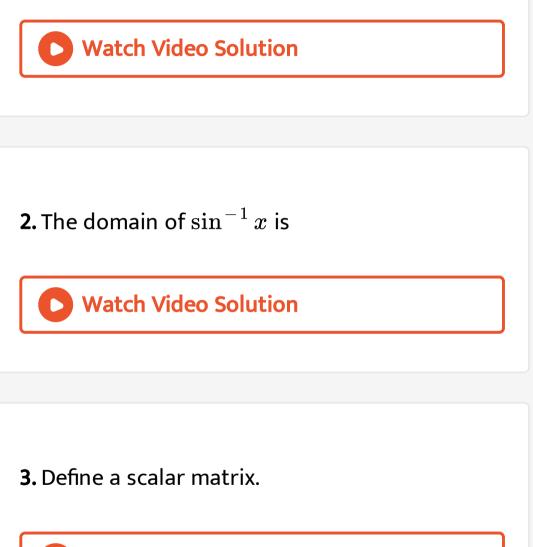
Part A I Answer All The Question

1. An operation * on z^+ (the set of all non-

negative integers) is defined as



operation on z^+ ?



4. Evalute the determinants in queations 1 and 2

Find the values of x, if

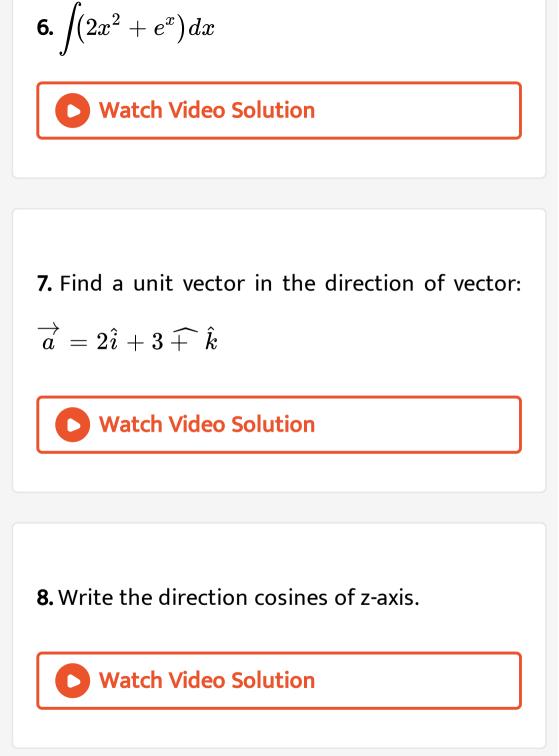
:

(i)
$$\begin{vmatrix} 2 & 4 \\ 5 & 1 \end{vmatrix} = \begin{vmatrix} 2x & 4 \\ 6 & x \end{vmatrix}$$

(ii) $\begin{vmatrix} 2 & 3 \\ 4 & 5 \end{vmatrix} = \begin{vmatrix} x & 3 \\ 2x & 5 \end{vmatrix}$

Watch Video Solution

5. y=2x+3 then
$$\frac{dy}{dx} = ?$$



9. Define optimal solution in linear programming problem.

Watch Video Solution

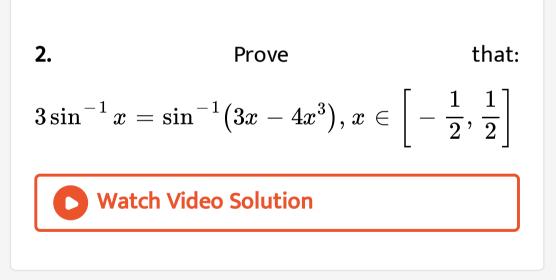
10. If
$$P(A)\frac{7}{13}$$
, $P(B) = \frac{9}{13}$ and $P(A \cap B) = \frac{4}{13}$, find $P\left(\frac{A}{B}\right)$.

Watch Video Solution

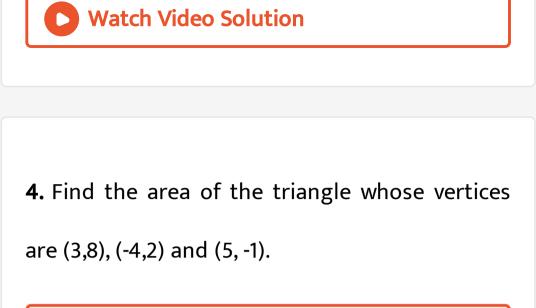
Part B li Answer Any Ten Questions

1. Find gof and fog, if $f\colon R o R$ and $g\colon R o R$ are given by $f(x)=\cos x$ and $g(x)=3x^2$. Show that gof
eq fog.





$$\mathbf{3.}\sin^{-1}\left(\sin=\frac{2\pi}{3}\right)=?$$





5.
$$y = \cos^{-1} igg(rac{1-x^2}{1+x^2} igg), 0 < x < 1.$$

6. Find
$$\frac{dy}{dx}$$
, when:
 $y = x^{\sin x}$
Watch Video Solution

7. Find the intervals in which the function f given by $f(x) = 2x^2 - 3x$ is(a) strictly increasing (b) strictly decreasing

$$\mathbf{8.} \int x^2 \log x dx.$$

Watch Video Solution

$$9.\int_0^1 \frac{dx}{\sqrt{1-x^2}}$$

Watch Video Solution

10. Find the degree of the differential equation

$$igg(rac{d^2y}{dx^3}igg)+2igg(rac{d^2y}{dx^2}igg)+rac{dy}{dx}+y=0.$$

11. Find
$$\left| \overrightarrow{a} - \overrightarrow{b} \right|$$
, if two vectors \overrightarrow{a} and \overrightarrow{b} are

such that |veca|=2,|vecb|=3 and veca.vecb=4.

Watch Video Solution

12. Find the area of the parallelogram whsoe adjacent sides are given by the vectors $\overrightarrow{a} = \hat{i} - \hat{j} + 3\hat{k}dn\overrightarrow{b} = 2\hat{i} - 7\hat{j} + \hat{k}$

13. Show that the lines $\frac{x-5}{7} = \frac{y+2}{-5} = \frac{z}{1}$ and $\frac{x}{1} = \frac{y}{2} = \frac{z}{3}$ are perpendicular to each other.



14. Find the probability distribution of X; the number of heads in two tosses of a coin (or a simultaneous toss of two coins).

1. Show that the relation R in the set $A = \{1, 2, 3, 4, 5\}$ given by $R = \{(a, b) : |a - b| \text{ is even }\}$, is an equivalence relation.

2. Q. solve for x,
$$an^{-1}(2x) + an^{-1}(3x) = rac{\pi}{4}$$

Watch Video Solution

3. Using elementary transformations, find the

inverse of the matrix [1327]

Watch Video Solution

4. If
$$x = a(\theta - \sin \theta)$$
 and $y = a(1 + \cos \theta)$,
then prove that $\frac{dy}{dx} = -\cot\left(\frac{\theta}{2}\right)$.

5. Differentiate w.r.t. x, the following function: (i)

$$\sqrt{3x+2} + rac{1}{\sqrt{2x^2+4}}$$
 (ii)

 $e^{ ext{sec}}$ $\hat{}~(2x)+3\cos^{-1}x$ (iii) $(\log)_7(\log x)$



6. Using differentials, find the approximate value

of $25^{1\,/\,3}$



7.
$$\int e^{x} \left(\frac{1 + \sin x}{1 + \cos x} \right) dx =$$

Watch Video Solution
8. Evaluate: $\int \frac{x}{(x+1)(x+2)} dx$
Watch Video Solution
9. Find the area of the region bounded by

 $y^2=9x, x=2, x=4$ and the x-axis in the first

quadrant.



10. Form the differential equation representing family of curve $\frac{x}{a} + \frac{y}{b}$ =1 where a and b are

arbitrary constants .



11. Prove that
$$\begin{bmatrix} \overrightarrow{a} + \overrightarrow{b} & \overrightarrow{b} + \overrightarrow{c} & \overrightarrow{c} + \overrightarrow{a} \end{bmatrix} = 2 \begin{bmatrix} \overrightarrow{a} & \overrightarrow{b} & \overrightarrow{c} \end{bmatrix}$$

12. Show that the position vector of the point P, which divides the line joining the points A and B having position vectors \overrightarrow{a} and \overrightarrow{b} internally in the ratio m:n is $\frac{m\overrightarrow{b}+n\overrightarrow{a}}{m+n}$ Watch Video Solution

13. Find the vector equation of the line, passing

through the points (-1,0,2) and (3,4,6)



14. A die is tossed thrice. Find the probability of

getting an odd number at least once.

O Watch Video Solution	
-------------------------------	--

Part D Iv Answer Any Ten Questions

1. Let R+ be the set of all non-negative real numbers. Show that the function $f\colon R+ o [4,\infty]$ given by $f(x)=x^2+4$ is invertible and write the inverse of f.

2. If A = [067 - 6087 - 80], B = [011102120], C = [2 - 23]Calculate AC, BC and (A + B)C. Also, verify that (A + B)C = AC + BC

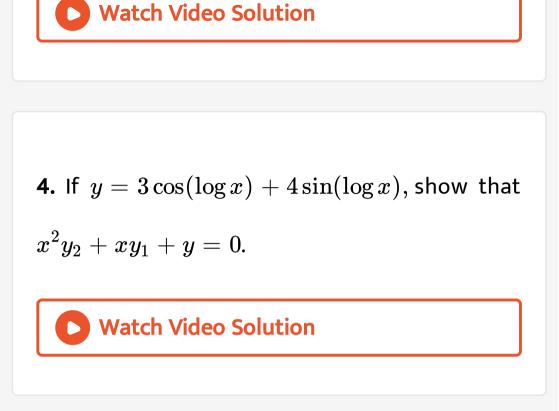
Watch Video Solution

3. Solve the following system of equations by matrix method.

3x - 2y + 3z = 8

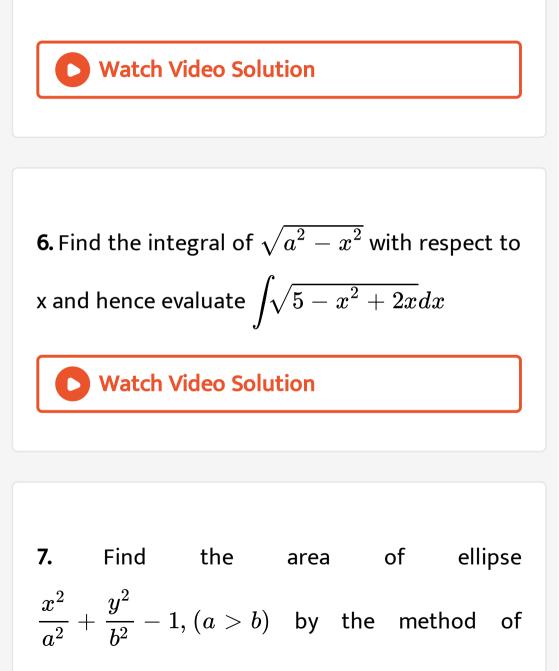
2x + y - z = 1

4x - 3y + 2z = 4



5. A ladder 5 m long is leaning against a wall. The bottom of the ladder is pulled along the ground, away from the wall, at the rate of 2 cm/s. How fast is its height on the wall decreasing when the foot of the ladder is 4 m

away from the wall?



integration and hence find the area of the
ellipse
$$\frac{x^2}{16} + \frac{y^2}{19} = 1$$
.
Watch Video Solution
8. Find the general solution of the differential
equation $x\frac{dy}{dx} + 2y = x^2(x \neq 0)$.
Watch Video Solution

9. Derive the equation of a plane in normal form

both in the vector and Cartesian form .



10. If a fair coin is tossed 10 times, find the probability of (i) exactly six heads (ii) at least six heads (iii) at most six heads

Watch Video Solution

Part E V Answer Any Ten Questions

1. Prove that
$$\int_0^a f(x) dx = \int_0^a f(a-x) dx$$
 and

hence evaluate the following:

(c)
$$\int_{0}^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\sin x} + \sqrt{\cos x}} dx$$

Watch Video Solution
2. For what value of 'k' the function

$$\begin{cases} kx^{2}, x \leq 2\\ 3, x > 2 \end{cases}$$
 is continuous at x=2
3. x > 2 is continuous at x=2
Watch Video Solution
3. Prove that:

$$\begin{vmatrix} a - b - c & 2a & 2a\\ 2b & b - c - a & 2b\\ 2c & 2c & c - a - b \end{vmatrix} = (a + b + c)^{3}$$

2c

