



# MATHS

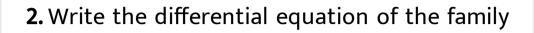
## **BOOKS - MODERN PUBLICATION**

## **SAMPLE PAPER 2014**



1. What do you mean by integration ? Write

your answer in one sentence.



of straight lines parallel to the y-axis.

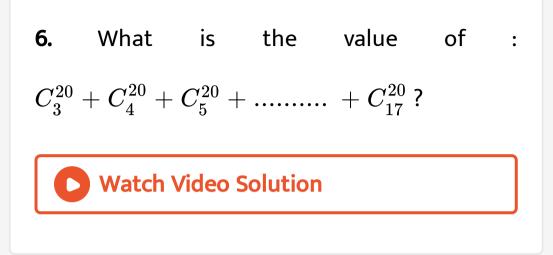


**3.** Is 
$$\stackrel{\rightarrow}{0}$$
 unique

4. Under which conditions the straight line  $\frac{x-a}{l} = \frac{y-b}{m} = \frac{z-c}{n}$  intersects the plane Ax + By + Cz = 0 at a point other than (a,b,c)?

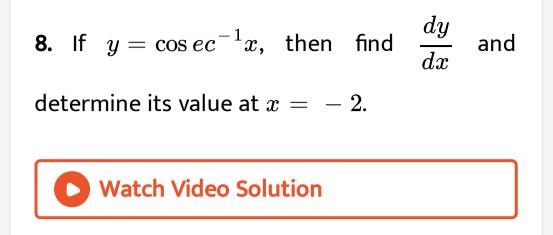
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**5.** How many straight lines in space through the origin are equally inclined to the coordinate axes?



### 7. If an event A is independent of it self, then

what is P(A)?



**9.** Show that no two normals to a parabola are parallel.



**10.** Examine the differentiability of  $\ln x^2$  for all

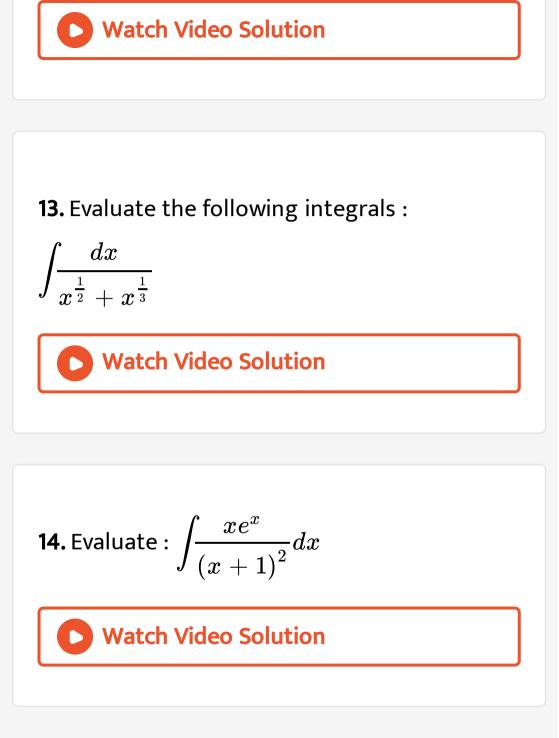
real values of x.

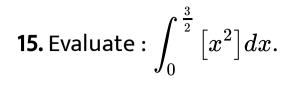
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**11.** Interpret Lagrange's mean value theorem geometrically.

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**12.** Find the following limits:  $\lim_{x \to 0} \left( \frac{\sin x}{x} \right)^{\frac{1}{x}}$ 





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16. Find the area of the region bounded by the

curve  $y = \sin^3 x$  and the straight lines

$$x=\ -rac{\pi}{4}, x=rac{\pi}{4} ext{ and } y=0.$$

17. Solve the following differential equations

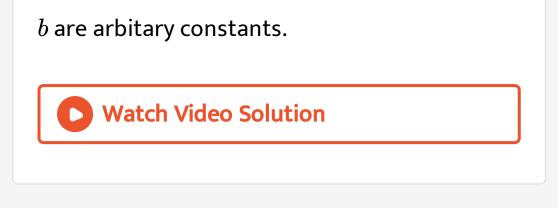
$$ig(1+y^2ig)dx+\Big(x-e^{- an^{-1}y}\Big)dy=0$$

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**18.** Solve : 
$$(x + y)dy + (x - y)dx = 0$$
.

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19. Find the differential equation whose general solution is  $ax^2 + by = 1$ , where a and



**20.** If the sum of two unit vectors is a unit vectors find the magnitude of their difference.

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**21.** Find the equation of the plane Paralel to the plane 2x - y + 3z + 1 = 0 and at a distance 3 units away from it.



# 22. Using the method of elemination find the symmetrical form of equation of the line 6x + 8y + 3z = 10 and x + 2y + z = 3.



### 23. Solve the following LPP graphically

Maximize, Z = 20x + 30y

Subject to  $3x+5y\leq 15$ 

 $x, y \ge 0.$ 



24. If A and B are square matrices of same order, then show by means of an example that  $AB \neq BA$  in general.



**25.** Five cities A,B,C,D,E are connected to each other by straight roads. What is the total number of such roads?



26. Two balls are drawn from a bag containing

6 red and 4 yellow balls. Find the probability

that atleast one of the ball is yellow?



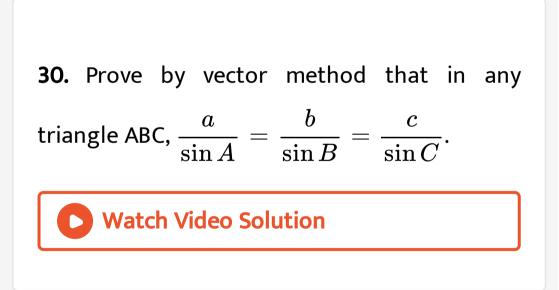
**27.** A person draws three cards at random one after another from a pack of 52 cards. Find the probability that all these cards are spades.



**28.** Evaluate 
$$\int_0^\pi \frac{x}{1+\sin x} dx$$

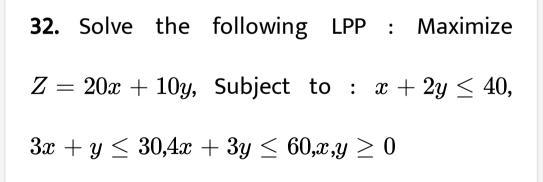
29. Solve the following differential equations

$$(x + \tan y)dy = \sin 2ydx$$



**31.** Find the equation of the sphere inscribed in a tetrahedron whose faces are x = 0, y = 0, z = 0 and 2x + 2y + z = 1.

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33. Solve the following system of equations by

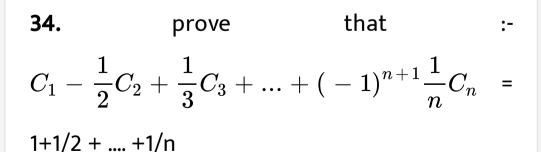
the matrix inversion method.

x + y + z = 4

2x - y + 3z = 1

and 3x + 2y - z = 1

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**35.** The probability of a shooter hitting a target is 4/5. Find the minimum number of times he must fire so that the probability of hitting the target at least once is greater than 0.999.