

ASSIGNMENT No 6/MPO/NOV 2017

1. Find the intercepts of the line $2x+3y=1$
2. Write the first two terms of the sequence where $a_n = n\left(\frac{n^2+1}{2}\right)$
3. Find a point on the x -axis, which is equidistant from the points $(7, 6)$ and $(3, 4)$
4. In an A.P. if m th term is n and the n th term is m , where $m \neq n$, find the p th term.
5. A line passes through (x_1, y_1) and (h, k) . If slope of the line is m , show that $k - y_1 = m(h - x_1)$
6. Show that $A \geq G$ where A and G are the AM and GM of two numbers a and b .
7. If the p th, q th and r th terms of a G.P. are a , b and c , respectively. Prove that $a^{q-r}b^{r-p}c^{p-q} = 1$
8. $P(a, b)$ is the mid-point of a line segment between axes. Show that equation of the line is $\frac{x}{a} + \frac{y}{b} = 2$
9. Reduce the equation $x - \sqrt{3}y + 8 = 0$ into normal form. Find the perpendicular distance of this line from the origin and angle between perpendicular and the positive x -axis.
10. The sum of two numbers is 6 times their geometric mean, show that numbers are in the ratio $3+2\sqrt{2} : 3-2\sqrt{2}$
11. Find equation of the line passing through the point $(2, 2)$ and cutting off intercepts on the axes whose sum is 9
12. Find the sum to n terms of the series: $5 + 11 + 19 + 29 + 41 \dots$

Assignment No:7/MPO/Dec 2017

1. Find the distance between the pair of points: (2, 3, 5) and (4, 3, 1).
2. A point is on the x-axis. What are its y-coordinate and z-coordinates?
3. Find the coordinates of the point which divides the line segment joining the points (1, -2, 3) and (3, 4, -5) in the ratio 2 : 3 internally.
4. If a parabolic reflector is 20 cm in diameter and 5 cm deep, find the focus.
5. Find the equation of set of points P such that $PA + PB = 2k$, where A and B are the points (3, 4, 5) and (-1, 3, -7), respectively.
6. Given that P (3, 2, -4), Q (5, 4, -6) and R (9, 8, -10) are collinear. Find the ratio in which Q divides PR.
7. Find the equation of the hyperbola with foci $(0, \pm 3)$ and vertices $\left(0, \pm \frac{\sqrt{11}}{2}\right)$
8. Check if the points A (3, 6, 9), B (10, 20, 30) and C (25, -41, 5), the vertices of a right angled triangle?
9. An equilateral triangle is inscribed in the parabola $y^2 = 4ax$, where one vertex is at the vertex of the parabola. Find the length of the side of the triangle.
10. Find the point and ratio in which the line segment joining the points (4, 8, 10) and (6, 10, -8) is divided by the YZ-plane.
11. Using section formula, prove that the three points (-4, 6, 10), (2, 4, 6) and (14, 0, -2) are collinear.
12. A rod AB of length 15 cm rests in between two coordinate axes in such a way that the end point A lies on x-axis and end point B lies on y-axis. A point P(x, y) is taken on the rod in such a way that AP = 6 cm. Show that the locus of P is an ellipse.

Assignment No: 8/MPO/Dec2017

1. Evaluate $\lim_{x \rightarrow 0} \frac{\sin x}{x^0}$ where x^0 denotes x degrees
2. Find $\lim_{x \rightarrow 1} \frac{x^{15} - 1}{x^{10} - 1}$
3. Find the derivative of $\sin x$ with respect to x
4. Evaluate $\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - 1}{x}$
5. Find the differential coefficient of $\tan x$ using quotient rule.
6. Coefficient of variation of two distributions are 60 and 70, and their standard deviations are 21 and 16, respectively. What are their arithmetic means.
7. Find $\lim_{x \rightarrow 1} f(x)$ where $f(x) = \begin{cases} x^2 - 1, & x \leq 1 \\ -x^2 - 1, & x > 1 \end{cases}$
8. Differentiate $\sin 2x$ using product rule.
9. Compute mean deviation about the mean for the following data :

x_i	2	5	6	8	10	12
f_i	2	8	10	7	8	5
10. Differentiate $\frac{x^5 - \cos x}{x^2 \sin x}$
11. Calculate mean, Variance and Standard Deviation for the following distribution.

Classes	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	3	7	12	15	8	3	2
12. Find the derivative of $(ax + b)^n$
