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Shift-2

EE24BTECH11063 - Y.Harsha Vardhan Reddy

Integer Type

1) $\lim\limits_{x\to 0} \frac{ax-\left(e^{4x}-1\right)}{ax\left(e^{4x}-1\right)}$
exists and is equal to b, then the value of $a-2b$ is
2) A line is a common tangent to the circle $(x-3)^2+y^2=9$ and the parabola $y^2=4x$. If the two points of contact (a,b) and (c,d) are distinct and lie in the first quadrant, then $2(a+c)$ is equal to
3) The value of
$\int_{-2}^{2}|3x^2-3x-6|\,dx$
is
4) If the remainder when x is divided by 4 is 3, then the remainder when $(2020+x)^{2022}$ is divided by 8 is
5) A line L passing through origin is perpendicular to the lines

$$L_1 : \mathbf{r} = (3+t)\,\hat{i} + (-1+2t)\,\hat{j} + (4+2t)\,\hat{k}$$
$$L_2 : \mathbf{r} = (3+2s)\,\hat{i} + (3+2s)\,\hat{j} + (2+s)\,\hat{k}$$

If the co-ordinates of the point in the first octant on L_2 at the distance of $\sqrt{17}$ from the point of intersection of L and L_1 are (a,b,c), then $18(a+b+c)$ is equal to
6) A function f is defined on $[-3,3]$ as

$$f(x) = \begin{cases} \min\{|x|, 2-x^2\}, & -2 \le x \le 2 \\ [|x|], & 2 < |x| \le 3 \end{cases}$$

where $[x]$ denotes the greatest integer $\le$ x. The number of points, where f is not differentiable in $(-3,3)$ is
7) If the curves $x=y^4$ and $xy=k$ cut at right angles, then $(4k)^6$ is equal to
8) The total number of two digit numbers 'n', such that 3^n+7^n is a multiple of 10, is
9) $\vec{a} = \hat{i}+\alpha\hat{j}+3\hat{k}$ and $\vec{b} = 3\hat{i}-\alpha\hat{j}+\hat{k}$. If the area of the parallelogram whose adjacent sides are represented by the vector $\vec{a}$ and $\vec{b}$ is $8\sqrt{3}$ square units, then $\vec{a}.\vec{b}$ is equal to
10) If the curve $y=y(x)$ represented by the solution of the differential equation $\left(2xy^2-y\right)dx + xdy = 0$, passes through the intersection of the lines, $2x-3y=1$ and $3x+2y=8$, then $|y(1)|$ is equal to