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1) Find $f(3)$ if the function $f(x)=3 x+5$.
2) Find $f(4)$ if the function $f(x)=(x-1)(x-2)(x-3)$.
3) Find the value of the function $f(x)=\frac{3+3 x}{2 x}$ when $x=3$.
4) The following table shows the different outputs against different inputs. Given that the input variable and the output variable have a linear relation.

| $\mathbf{x}$ | 1 | 5 | 9 | 11 | 4 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{y}$ | 8 | 32 | 56 | 68 | 26 |

(a) Find the function $f(x)$ describing the input and the output.
(b) Using this function, find the value of $f(10)$.
5) Write a function $f(x)$ whose output is the sum of the cube of the input and the input. Also, find the value of $f(4)$.
6) Given the height of the base is 4 units. Find the area function $A(h)$ of the triangle in terms of height (h). Find the area of the triangle for $h=5$ units.
7) Find the $V(10)$ of an object if $V(x)=2 x^{2}+3 x$ where $x$ is one of the parameters of the object.

THE MATH EXPERT
8) An object is travelling from point $A$ to point $B$ for time $\mathbf{t}$. If the distance travelled by the object is given by the function $s(t)=5 t^{2}$
$+2 t+5$ where $s(t)$ is the distance travelled after time $\mathbf{t}$ and its units are in km. Find the distance travelled by the object for $t=2$ secs.
9) Identify whether the following function is linear or nonlinear from the table.

| $\mathbf{x}$ | 1 | 2 | 3 | 4 | 7 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{y}$ | 7 | 8 | 9 | 10 | 14 |

10) The functions $g(x)$ and $h(x)$ are shown in the table below against input values ( $x$ ).

| $x$ | 1 | 3 | 4 | 7 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $g(x)$ | 2 | 4 | 8 | 10 | 12 |
| $h(x)$ | -2 | 1 | -2 | 4 | 3 |

Do the functions $g(x)$ and $h(x)$ intersect at any point as per this table? If yes, then find all $x$ for which they intersect.
11) Given that $f(x)=4 x+8$. Find the value of $x$ for which $f(x)=0$.
12) $f(x)$ is a cubic function whose roots are 2,3 and 4 . Find $f(x)$ and also find the value of $f(2)$.
13) Given the function $f(x)=f(x-1)+f(x-2)$ for $x>2$. Given that $f(1)=f(2)=1$. Find the value of $f(6)$.
14) Given that $y=x+5$. Find $x$ in terms of $y$. Then, find the value of $x$ for $y=5$.
15) Given functions $g(x)=2 x+3$ and $h(x)=x+1$. If $f(x)=g(h(x))$, find the function $f(x)$. Also find the value of $f(x)-g(x)$.

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"I appreciate the effort that miss Nitya puts in to help my daughter understand the best methods and to explain why she got a problem incorrect.
She is extremely patient and generous with Miranda."

## ANSWERS

| 1) $f(3)=14$ | 2) $f(4)=6$ | 3) $f(3)=2$ |
| :--- | :--- | :--- |
| 4) $f(x)=6 x+2$ <br> $f(10)=62$ | 5) $f(x)=x^{3}+x$, <br> $f(4)=66$ | 6) $A(h)=2 h$, <br> A(5) $=10$ units |
| 7) $V(10)=230$ units $^{3}$ | 8) $s(2)=29 \mathrm{~km}$ | 9) $f(x)$ is not linear. |
| 10) No | 11) $x=-2$ | 12) $f(x)=(x-2)(x-3)(x-$ <br> 4), $f(2)=0$ |
| 13) $f(6)=8$ | $14) x=y-5$, <br> for $y=5, x=0$ | 15) $f(x)=2 x+5$, <br> $f(x)-g(x)=2$ |

## FUN FACT

- An easy trick to remember the order of PEMDAS is "Please Excuse My Dear Aunt Sally".
- Many mnemonics following order of operations are used along with PEMDAS worldwide, like BODMAS, BEDMAS, and BIDMAS.

