

## CHEMISTRY ONLINE

- TUITION -

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## PURE MATH

## ALGEBRA AND FUNCTION

## Level \& Board

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EDEXCEL (A-LEVEL)
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## TOPIC:

GEOMETRIC SERIES

## PAPER TYPE:

SOLUTION - 18

## Q. 1

we can use the formula for the sum of a geometric series

$$
S=\frac{a\left(1-r^{n}\right)}{1-r}
$$

In this case, $a=3$ and $r=2$ Now, let's find the sum:

$$
S=\frac{3\left(1-r^{n}\right)}{1-2}
$$

Since $r=2$ the series continues to double with each them, if you want the sum for a specific number of terms ( n ), you can substitues that value not formula

If you what the sum for an infinite geometric series, where $n$ goes to infinity $(\mathrm{n} \rightarrow \infty)$. We can simplify the formula further.

$$
S=\frac{3\left(1-2^{n}\right)}{1-2}
$$

Since $r=2$ and the absolute value of the common ration is greater than 1, as n approaches infinity, $\left(1-2^{\mathrm{n}}\right)$ will be become very large in magnitued, and the series will diverge. There are, the sum for an infinite geometric series with $\mathrm{r}=2$ does not exist.

## Q. 2

To find the sum (S) of the geommetric series, use the formula:

$$
S=\frac{a-\left(-0.5^{n}\right)}{1-(1-0.5)}
$$

This formula will give you the sum for a specific number of terms $(\mathrm{n})$ if you want the sum for an infinite geometric series, let me know, and I can provide that as will.

## Q. 3

To determine the sum $(\mathrm{S})$ of the geometric series, use the formula:

$$
S=\frac{a\left(1-r^{n}\right)}{1-r}
$$

In this case $a=2$ and $r=3$. The formula becomes:

$$
S=\frac{2\left(1-3^{n}\right)}{1-3}
$$

This formula will give you the sum for a specific number of terms ( n ) if you want the sum for an infinite geometric series, let me know, and I can provide that as will.

## Q. 4

To find the sum $(S)$ of the geometric series, use the formula:

$$
S=\frac{a\left(1-r^{n}\right)}{1-r}
$$

In this case, $\mathrm{a}=4$ and $\mathrm{r}=-\frac{1}{2}$. The formula becomes:

$$
S=\frac{4\left(-\left(-\frac{1}{2}\right)^{n}\right.}{1-\left(-\frac{1}{2}\right)}
$$

This formula will give you the sum for a specific number of terms ( n ).

## Q. 5

To find the sum (S) of the geometric eries, use the formula:

$$
S=\frac{a\left(1-r^{n}\right)}{1-r}
$$

In this case, $\mathrm{a}=7$ and $\mathrm{r}=-\frac{1}{3}$. The formula becomes.

$$
S=\frac{7\left(1-\left(\left(-\frac{1}{3}\right)^{n}\right)\right.}{1-\left(-\frac{1}{3}\right)}
$$

This formula will give you the sum for a specific number of terms (n).
Q. 6

To determine the sum $(S)$ of the geometric series, use the formula.

$$
S=\frac{a\left(1-r^{n}\right)}{1-r}
$$

In this case $a=1$ and $r=\frac{2}{3}$. The formula becomes

$$
S=\frac{1-\left(1-\left(\left(\frac{2}{3}\right)^{n}\right)\right.}{1-\frac{2}{3}}
$$

This formula will give you the sum for a specific number of terms ( n ).

## Q. 7

To find the sum $(S)$ of the geometric series, use the formula:

$$
S=\frac{a\left(1-r^{n}\right)}{1-r}
$$

In this case $a=-5$ and $r=-2$. The formula becomes.

$$
S=\frac{-5\left(1--2^{n}\right)}{1-(-2)}
$$

This formula will give you the sum for a specific number of terms (n).

## Q. 8

To find the sum $(S)$ of the geometric series, use the formula:

$$
S=\frac{a\left(1-r^{n}\right)}{1-r}
$$

In this case $1=6$ and $r=\frac{1}{2}$. The formula becomes:

$$
S=\frac{6\left(1-\left(\frac{1}{2}\right)^{n}\right.}{1-\frac{1}{2}}
$$

This formula will give you the sum for a specific number of terms ( n ).


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