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PURE MATH

ALGEBRA AND FUNCTION

Level & Board	EDEXCEL (A-LEVEL)
TOPIC:	GEOMETRIC SERIES
PAPER TYPE:	SOLUTION - 1
TOTAL QUESTIONS	8
TOTAL MARKS	34

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

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

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

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

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 $(n \rightarrow \infty)$. We can simplify the formula further.

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

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

Q.2

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

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

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.3

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

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

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

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

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:

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

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

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

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

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Q.5

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

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

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

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

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.

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

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

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

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:

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

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

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

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:

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

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

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

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

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