

Sum of the Series

The n^{th} partial sum is given. Find the infinite sum (S) of the series. Also determine whether the series converges or diverges.

1) $S_n = \frac{n^3 + 1}{n^2 + 1}$

2) $S_n = \frac{5n^2 - n^3}{10 + 6n^3}$

3) $S_n = \frac{0.8n}{n + 1.7}$

5) $S_n = \frac{9n^4}{n + 12}$

7) $S_n = \frac{-8n + 9}{3 + n}$

8) $S_n = 15n - \frac{n^2}{n^4 + 11}$

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2) $S_n = \frac{5n^2 - n^3}{10 + 6n^3}$

$S = \infty$; the series diverges $S = -\frac{1}{6}$; the series converges

3) $S_n = \frac{0.8n}{n + 1.7}$

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 $S = 0.8$; the series converges

the series diverges

5) $S_n = \frac{9n^4}{n + 12}$

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 $S = \infty$; the series diverges

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7) $S_n = \frac{-8n + 9}{3 + n}$

8) $S_n = 15n - \frac{n^2}{n^4 + 11}$

 $S = -8$; the series converges $S = \infty$; the series diverges