Answer key

The method: Infinite geometric series

When $-1 < r < 1$, the sum of all the terms is $a_1 \div (1 - r)$.

$64 + 48 + 36 + \ldots = 256$

$r = \frac{3}{4}$ $|r| < 1$, so the sum is finite

$\frac{64}{1 - \frac{3}{4}} = 256$ $S = a_1 \div (1 - r)$

$27 - 9 + 3 - \ldots = \frac{81}{4}$

$r = -\frac{1}{3}$ $|r| < 1$, so the sum is finite

$\frac{27}{1 - (-\frac{1}{3})} = \frac{81}{4}$ $S = a_1 \div (1 - r)$

Problems 1 and 2 worked out · Version 0A

$36 - 12 + 4 - \ldots = 27$

$r = -\frac{1}{3}$ $|r| < 1$, so the sum is finite

$\frac{36}{1 - (-\frac{1}{3})} = 27$ $S = a_1 \div (1 - r)$

$16 + 4 + 1 + \ldots = \frac{64}{3}$

$r = \frac{1}{4}$ $|r| < 1$, so the sum is finite

$\frac{16}{1 - \frac{1}{4}} = \frac{64}{3}$ $S = a_1 \div (1 - r)$

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1) 27 2) $\frac{64}{3}$ 3) 8 4) $\frac{128}{3}$ 5) 8 6) 192 7) $\frac{8}{3}$

8) $\frac{125}{4}$ 9) $\frac{125}{2}$ 10) 32 11) $\frac{81}{2}$ 12) $\frac{27}{4}$ 13) 54

14) 125 15) 128 16) 24 17) 54 18) 64 19) 108

20) 16 21) 27 22) 27 23) $\frac{27}{2}$ 24) $\frac{16}{3}$ 25) $\frac{128}{3}$

26) 256 27) $\frac{256}{3}$ 28) 8 29) $\frac{125}{4}$ 30) 64