

A2.A.34: Sigma Notation: Represent the sum of a series, using sigma notation

1 Mrs. Hill asked her students to express the sum $1 + 3 + 5 + 7 + 9 + \dots + 39$ using sigma notation. Four different student answers were given. Which student answer is correct?

1) $\sum_{k=1}^{20} (2k - 1)$

3) $\sum_{k=-1}^{37} (k + 2)$

2) $\sum_{k=2}^{40} (k - 1)$

4) $\sum_{k=1}^{39} (2k - 1)$

2 Which expression represents the sum of the sequence 3, 5, 7, 9, 11?

1) $\sum_{n=0}^5 (2n + 1)$

3) $\sum_{n=1}^5 (3n + 1)$

2) $\sum_{n=1}^5 3n$

4) $\sum_{n=1}^5 (2n + 1)$

3 Jonathan's teacher required him to express the sum $\frac{2}{3} + \frac{3}{4} + \frac{4}{5} + \frac{5}{6} + \frac{6}{7}$ using sigma notation. Jonathan proposed four possible answers. Which of these four answers is *not* correct?

1) $\sum_{k=3}^7 \frac{k-1}{k}$

3) $\sum_{k=1}^5 \frac{k+1}{k+2}$

2) $\sum_{k=1}^5 \frac{k}{k+1}$

4) $\sum_{k=2}^6 \frac{k}{k+1}$

4 The expression $1 + \sqrt{2} + \sqrt[3]{3}$ is equivalent to

1) $\sum_{n=1}^3 \sqrt{n}$

3) $\sum_{n=1}^3 n^{-n}$

2) $\sum_{n=0}^3 n^n$

4) $\sum_{n=1}^3 n^{\frac{1}{n}}$

5 Express the sum $7 + 14 + 21 + 28 + \dots + 105$ using sigma notation.

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Answer Section

1 ANS: 1 PTS: 2 REF: 061025a2

2 ANS: 4 PTS: 2 REF: 060807b

3 ANS: 2

$$\sum_{k=1}^5 \frac{k}{k+1} = \frac{1}{2} + \frac{2}{3} + \frac{3}{4} + \frac{4}{5} + \frac{5}{6}.$$

PTS: 2 REF: 080614b

4 ANS: 4

$$\sum_{n=1}^3 \frac{1}{n^n} = 1^{\frac{1}{1}} + 2^{\frac{1}{2}} + 3^{\frac{1}{3}} = 1 + \sqrt{2} + \sqrt[3]{3}$$

PTS: 2 REF: 060714b

5 ANS:

$$\sum_{n=1}^{15} 7n$$

PTS: 2 REF: 081029a2