

# Series Extra Practice WS

- 1) Write the following partial sum using sigma notation. Then, find the sum.

$$\frac{1}{3} + \frac{2}{4} + \frac{3}{5} + \frac{4}{6} + \dots + \frac{99}{100}$$

- 2) Write the following partial sum using sigma notation. Then, find the sum.

$$\frac{3(3)}{1} - \frac{3(5)}{4} + \frac{3(7)}{9} - \frac{3(9)}{16} + \frac{3(11)}{25} - \dots + \frac{3(33)}{256}$$

- 3) Write the following series using sigma notation. Then, find the sum accurate to 6 decimal places. Be sure to show work to support your answer.

$$\frac{4}{1} + \frac{8}{2} + \frac{16}{6} + \frac{32}{24} + \frac{64}{120} + \dots$$

- 4) Find the sum indicated.

a)  $\sum_{n=0}^{\infty} 7\left(-\frac{2}{3}\right)^n$

b)  $\sum_{k=0}^{\infty} \frac{1}{2} \left(\frac{5}{4}\right)^k$

## Partial Review: Explicit Formulas

- 1) Find an explicit formula for the  $n$ th term of each sequence.

a) 9, 16, 25, 36, 49, ...

b) 45.3, 43.9, 42.5, 41.1, ...

- 2) A ball bounces 64 cm high on its first bounce, 48 cm high on its second bounce, 36 cm high on its third bounce, 27 cm high on its fourth bounce, etc.

a) Determine a formula for the height of each bounce.

b) Find the total of the first 7 heights attained by the ball.

- 3) Find the indicated sums. Be sure to show work, as appropriate.

a)  $\sum_{n=1}^4 3\left(-\frac{2}{3}\right)^{n-1}$

b)  $\sum_{k=3}^{15} \frac{k^2}{k+1}$

c)  $\sum_{i=4}^{16} \frac{4+2i}{3}$

d)  $\sum_{j=0}^{\infty} 4\left(-\frac{2}{5}\right)^j$

e)  $\sum_{n=0}^{\infty} 2^n$

- 4) Write the following sums using summation notation.

a)  $\frac{2}{27+1} + \frac{6}{64+2} + \frac{24}{125+3} + \frac{120}{216+4} + \dots$

b)  $\frac{1}{2} - \frac{3}{4} + \frac{9}{8} - \frac{27}{16} + \dots + \frac{6561}{512}$