

Math 270 - Basic Discrete Mathematics  
Practice Quiz on Section 5.1

Solutions

**Directions:** Answer the problems given below.

1. Find explicit formulas for the sequences  $a_1, a_2, a_3, \dots$  given below.

a. 4, 7, 10, 13, 16,  $\dots$

$$a_n = 3n + 1$$

b.  $0, 1, 8, 27, 64, \dots$   
 $0^3, 1^3, 2^3, 3^3, 4^3$

$$a_n = (n-1)^3$$

c.  $-\frac{1}{2}, \frac{2}{3}, -\frac{3}{4}, \frac{4}{5}, -\frac{5}{6}, \dots$

$$a_n = (-1)^n \cdot \frac{n}{n+1}$$

2. Write the following sums and products using summation or product notation:

a.  $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{11} = \sum_{k=2}^{11} \frac{1}{k}$

b.  $2 \cdot 4 \cdot 6 \cdot 8 \cdot 10 \cdot 12 \cdot 14 \cdot 16 = \prod_{i=1}^8 (2i)$

c.  $3 + 3^2 + 3^3 + 3^4 + \dots + 3^n = \sum_{j=1}^n 3^j$