BECA/Huson/Precalculus: Sequences First and last name:
12 September 2024 Section:

1.7 Quiz challenge problems *HSF-IF.A.3 Recognize sequences, define them recursively*

1. Given the arithmetic sequence $f(n)$ whose first two terms are 4 and 9.
   (a) Write down $f(2)$

   (b) Write down the value of the common difference d

   (c) Find $f(3)$

   (d) Write an equation relating $f(5)$ and $f(6)$

2. Given the geometric sequence $g(n)$ whose first term is 3 with a growth rate of $r = 2$.
   (a) Find the second term $g(2)$.

   (b) State the value of the first term using function notation in an equation.

   (c) Define g recursively using function notation. (There should be two equations)

   (d) Write down the value of $\dfrac{g(7)}{g(6)}$.

3. A sequence is defined recursively as

$$f(1) = 2$$
$$f(n) = f(n-1) \times 5$$

   (a) Is the sequence arithmetic, geometric, or neither?

   (b) Find the value of $f(3)$.

4. Given an arithmetic sequence $f(n)$ whose first term is 11 and third term 17.

   (a) Using d for the common difference and $x = f(2)$ for the second term, write an equation relating the values of the first two terms. (you may use x or $f(2)$)

   (b) Write an equation relating the second and third terms.

   (c) Solve the system of equations to find d and x.

5. Given an arithmetic sequence $47, x, 183, \ldots$, find x.

6. Given a geometric sequence $\frac{2}{5}, x, \frac{18}{125}, \ldots$, find x.