

## College Algebra Quiz 4a

The correct response is shown in red. Explanations are shown in blue.

1. Suppose  $k$  is a sequence whose rule is given by  $k(n) = \frac{2n-3}{2}$ .

Calculate the first three terms of the sequence. Use functional notation to write your results.

$$k(1) = \frac{2(1)-3}{2} = -\frac{1}{2}$$

$$k(2) = \frac{2(2)-3}{2} = \frac{1}{2}$$

$$k(3) = \frac{2(3)-3}{2} = \frac{3}{2}$$

2. Complete the following definition.

**Definition:** A linear function is a function whose domain is **R**, whose range is **R**, and whose rule can be expressed as a **linear equation**.

3. Suppose  $f(3) = 2$  and  $f(3) = 7$ . Explain why  $f$  is not a function.

**f is not a function because the range element associated with the domain element 3 is not unique.**

4. A point  $P$  with first coordinate  $t$  is on the graph of a function named  $H$ .  
What is the second coordinate of the point  $P$ ?

The second coordinate is  $H(t)$

The point  $P$  is on the graph of  $H$  means that the second coordinate of  $P$  is the range value associated with the first coordinate. That range value is  $H(t)$ . The point  $P$  is  $(t, H(t))$ .

5. The rule for  $\text{mod}_7$  is given by  $\text{mod}_7(n)$  is the remainder when  $n$  is divided by 7. The domain for  $\text{mod}_7$  is  $\mathbb{N}$  and the range for  $\text{mod}_7$  is  $\{0, 1, 2, 3, 4, 5, 6\}$ . What is the range element associated with 44 by the function  $\text{mod}_7$ ? Use functional notation to present your answer.

$$\text{mod}_7(44) = 2 \quad \text{because } 44 = (6)(7) + 2$$