Answer on Question #56017 - Math -Algebra

1. If $f(x) = x^2 + 3x + 5$ what is $f(3 + h)$?
   A. $(3 + h)^2 + 8 + h$
   B. $h^2 + 9h + 23$
   C. $(x^2 + 3x + 5)(3 + h)$
   D. $h^2 + h + 23.$

Solution: $f(3 + h) = (3 + h)^2 + 3(3 + h) + 5 = 9 + 6h + h^2 + 9 + 3h + 5 = h^2 + 9h + 23.$

Answer: B. $h^2 + 9h + 23.$

2. Which of the following is true about the function shown below?

$$\frac{1}{\sqrt{x-6}}$$

   A. Its domain is $(6, \infty)$ and its range is $(-\infty, \infty)$
   B. Its domain is $(6, \infty)$ and its range is $(-\infty, 0) \cup (0, \infty)$
   C. Its domain is $(6, \infty)$ and its range is $(0, \infty)$
   D. Its domain is $(-\infty, 0)$ and its range is $(0, \infty)$

Solution:

Domain: $x - 6 > 0 \Rightarrow x > 6$

Range: $\frac{1}{\sqrt{x-6}} > 0$

Answer: C. Its domain is $(6, \infty)$ and its range is $(0, \infty)$.

3. Which of the following statements are true regarding functions. There are multiple right answers. Check all that apply.
   A. A function is a relation in which multiple values of the input variable are paired with at least one of the output variable
   B. A sequence is a function whose domain is the set of rational numbers.
   C. The vertical line test may be used to determine whether a relation is a function
   D. The horizontal line test may be used to determine whether a function is one to one.

Solution:

A - True.

B – Wrong. A sequence is a function whose domain is the set of natural numbers (positive integers).

C – True.

D – True.

Answer: A, C, D – True. B – False.