Function Notation Answer and Explanations

Answers

1. D **2. C** **3. C** **4. A** **5. D** **6. D** **7. B** **8. A** **9. D** **10. A**

Answer Explanations

1. **D.** In this problem, we are given two functions and asked to find the value of the function $h(x)$ when $x=0$. First, we can substitute $g(x)$ into our $h(x)$ function $h(x)=1+(x^2-6x+8)\to h(x)=x^2-6x+9$. Now we can simplify our quadratic function to make the substitution easier. $h(x)=(x-3)^2\to h(0)=(0-3)^2=9$. Thus, answer choice (D) is correct.

2. **C.** In this problem, we are given the function $f(x)=x(x+7)$ and asked to find the value of $g(2)$ when $g(x)=f(x)+7$. First, we can substitute $f(x)$ into our $g(x)$ function. $g(x)=x(x+7)+7\to g(x)=x^2+7x+7.$ Now we can substitute in 2 for x in our $g(x)$ function $g(2)=(2)^2+7(2)+7=25$. Thus, answer choice (C) is correct.

3. **C.** In this problem, we are given the function $y=g(x)$ and told $g(x)$ is equivalent to the function $y=h(x)$ reflected over the *x*-axis. A way to think about this problem is to consider an arbitrary point on g(x), say (a,b). Where would we expect (a, b) to lie when reflected over the x-axis? This reflection simply makes the y-value negative, whilst keeping the magnitude the same and not changing the x-value in any way. In other words, (a, b) reflected over the x-axis yields (a, -b). For each point along the curve y=g(x), we want h(x) to be the negative value of g(x). This yields h(x) = -g(x), and after dividing by -1, we get g(x) = -h(x), or answer C.

4. **A.** In this problem, we are asked to find the value of the function $f(x)$ when x is equivalent to the value of $f(1)$. Given the chart we know that our function $f(x)$ when x is equal to 1 our f function is equal to 4. Therefore, we find the value $f(4)$ which is equal to 14. Thus, answer choice (A) is correct.

5. **D.** In this problem, we are given function $f(x)$ and asked to find a function, $h(x)$ that is vertically stretched by 4 and reflected over the *x*-axis. To vertically stretch a function, we must multiply the *y-value* by 4 and keep the *x-value* the same. Furthermore, in order to reflect the function over the *x*-axis we must produce the opposite *y-value*; therefore, we put a negative in front of the function value. Thus, answer choice (D) is correct.

6. **D.** In this problem, we are given the function $f(x)=x^2-x$ and $g(x)=1/x$ and asked to find the function $f(x)$ of $g(x)$. Therefore, knowing $g(x)=1/x$ we are essentially finding $f(1/x)$. $f(1/x)=(1/x)^2-1/x=1/x^2-1/x$, which means answer choice (D) is correct.

7. **B.** In this problem, we are given the function $f(x)=4x-7$ and asked to find a function equivalent to $f(f(x))$. Knowing that $f(x)=4x-7$, we can say that we are finding an equivalent expression to

$f(4x-7)$. Thus, we can plug $4x-7$ into our function $f(x)$ giving us $f(4x-7)=4(4x-7)-7 \rightarrow 16x-28-7 \rightarrow 16x-35$. Thus, answer choice (B) is correct.

8. **A.** In this problem, we are given the function notation $(g \circ f)(-1)$, which can be rewritten as $g(f(-1))$. Therefore, we must find the value of $f(-1)$, which can be found in the given table. Knowing that $f(-1)=2$, we must find the value of $g(2)$. Given that the value of $g(2)=12$, we know that the answer choice (A) is correct.

9. **D.** In this problem, we are given the function notation $(g \circ f)(-2)$, which can be rewritten as $g(f(-2))$. Therefore, we must find the value of $f(-2)$, which can be found in the given table. Knowing that $f(-2)=1$, we must find the value of $g(1)$. Given that the value of $g(1)=8$, we know that the answer choice (D) is correct.

10. **A.** In this problem, we are given two functions, $f(x)$ and $g(x)$, and asked to find the value of $h(x)$. Knowing that $h(x)$ is comprised of both $f(x)$ and $g(x)$, we can plug our given functions in and simplify. $h(x)=\frac{x^2-16}{x+4}-\frac{x^2-6x+9}{x-3} \rightarrow \frac{(x-4)\cancel{(x+4)}}{\cancel{(x+4)}}-\frac{(x-3)^{\cancel{2}}}{\cancel{(x-3)}} \rightarrow (x-4)-(x-3)=-1$.