Use the graphs of $f(x)$, $g(x)$ shown below to evaluate the expression.

$f(g(f(-2)))$

Solution

To find the value of $f(g(f(-2)))$, we must work from the inside out, and first find the value of $f(-2)$. To find the value of $f(-2)$ we must use the graph of $f(x)$ and find the output of function $f$ when the input is $x=-2$. Looking at the graph of $f(x)$, $f(-2) = 4$.

When we insert the output from $f(-2)$ into the problem, we now need to find the value of $f(g(4))$. To find this value, we must now find the value of $g(4)$. To find the value of $g(4)$, we must use the graph of $g(x)$ and find the output when the input is $x=4$. Looking at the graph of $g(x)$, $g(4) = 2$. 
When we insert the output from \( g(4) \) into the problem, we now need to find the value of \( f(2) \). To find this value, we must use the graph of \( f(x) \) and find the output when the input is \( x=2 \). Looking at the graph of \( f(x) \), \( f(2) = 4 \).

The solution to \( f(g(f(2))) \) is 4.