

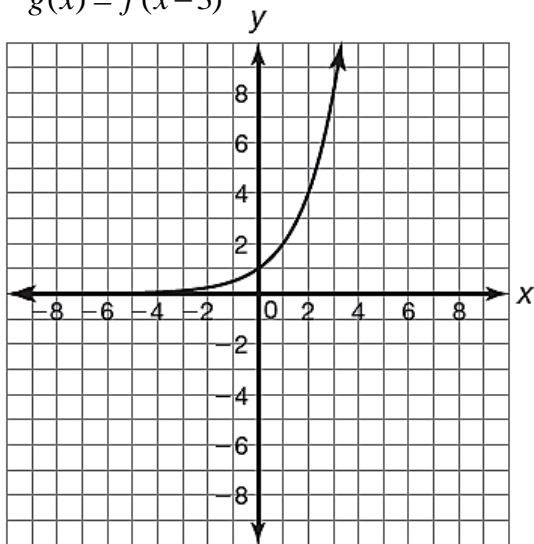
## Horizontal Translations

Describe each new graph in relation to its basic function.

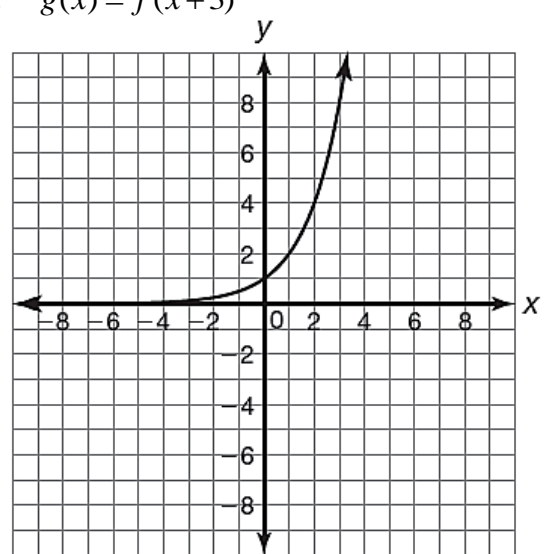
- Basic function:  $h(x) = x$     New function:  $f(x) = x + b$
- Basic function:  $h(x) = b^x$     New function:  $f(x) = b^{(x-c)}$
- Basic function:  $h(x) = x$     New function:  $f(x) = (x - b)$
- Basic function:  $h(x) = b^x$     New function:  $f(x) = b^{(x+c)}$
- Basic function:  $h(x) = b^x$     New function:  $f(x) = b^x - k$
- Basic function:  $h(x) = x$     New function:  $f(x) = (x + b)$

Each coordinate plane shows the graph of  $f(x)$ . Sketch the graph of  $g(x)$ .

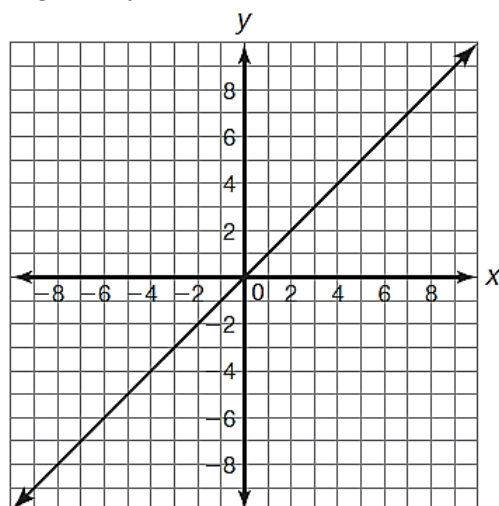
7.  $g(x) = f(x - 3)$



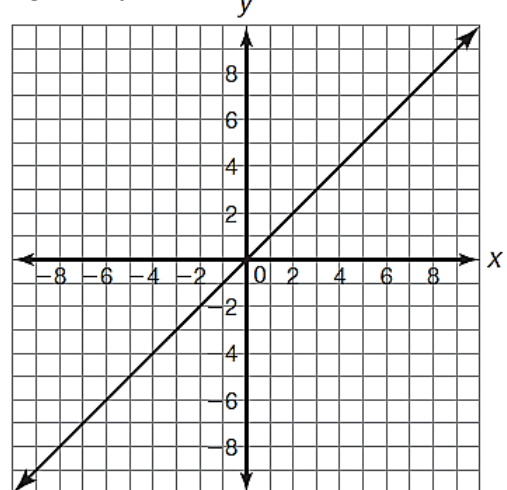
8.  $g(x) = f(x + 3)$



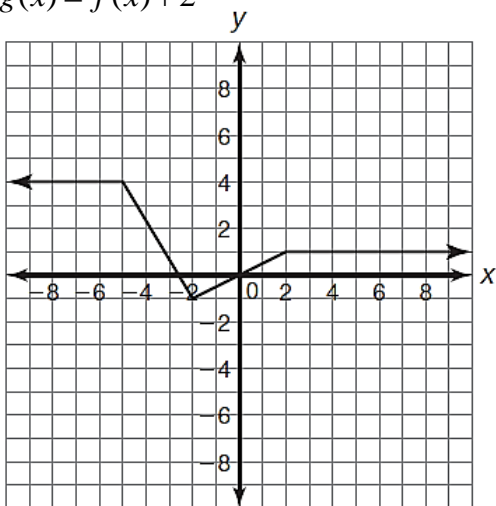
9.  $g(x) = f(x + 5)$



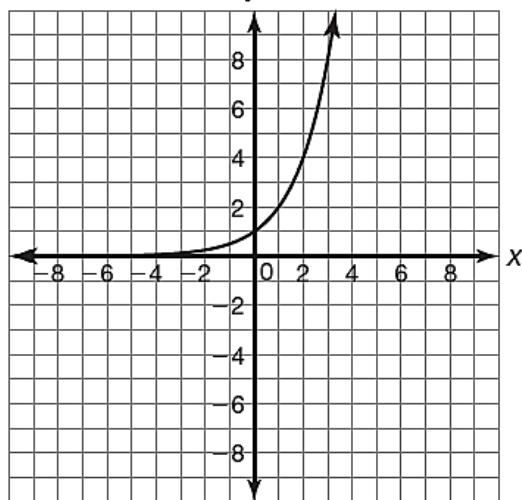
10.  $g(x) = f(x - 4)$



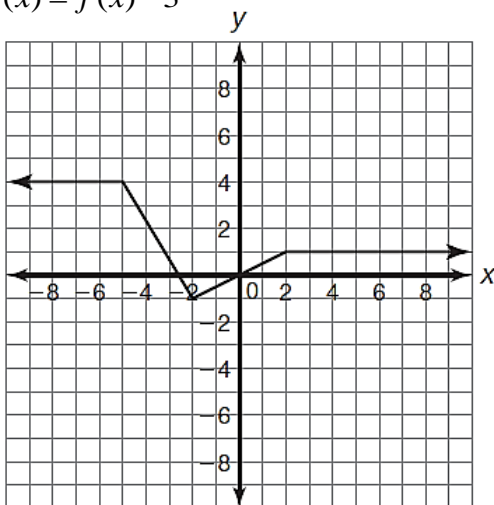
11.  $g(x) = f(x) + 2$



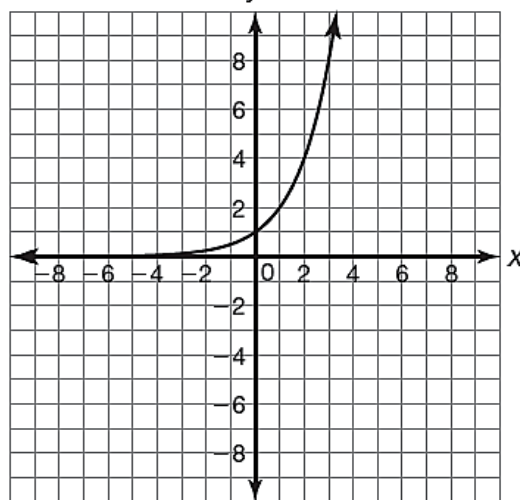
12.  $g(x) = f(x) - 5$



13.  $g(x) = f(x) - 3$

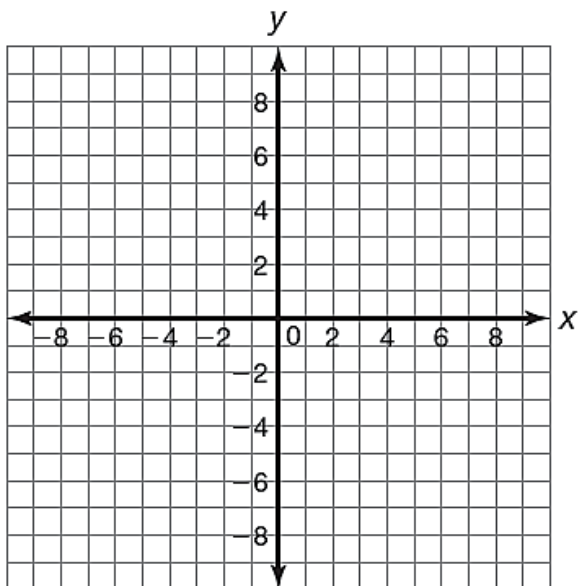


14.  $g(x) = f(x) + 4$



For each of the following, graph the basic function and the second function on the same graph.

15.  $f(x) = 2^x$ ;  $g(x) = 2^x - 4$



16.  $f(x) = \left(\frac{1}{2}\right)^x$ ;  $g(x) = \left(\frac{1}{2}\right)^{x+3}$

