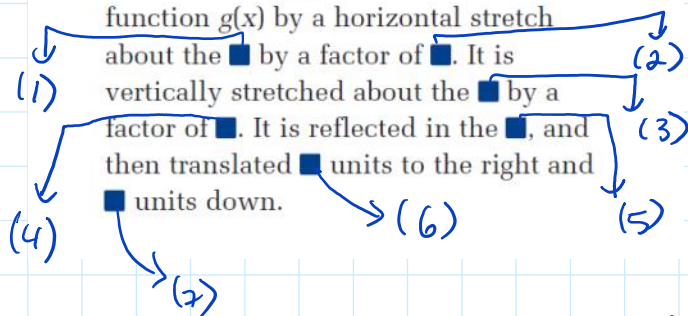


2. The function $y = f(x)$ is transformed to the function $g(x) = -3f(4x - 16) - 10$. Copy and complete the following statements by filling in the blanks.

The function $f(x)$ is transformed to the function $g(x)$ by a horizontal stretch



$$g(x) = -3f(4x - 16) - 10$$

follows the template

$$g(x) = a f(b(x-h)) + k$$

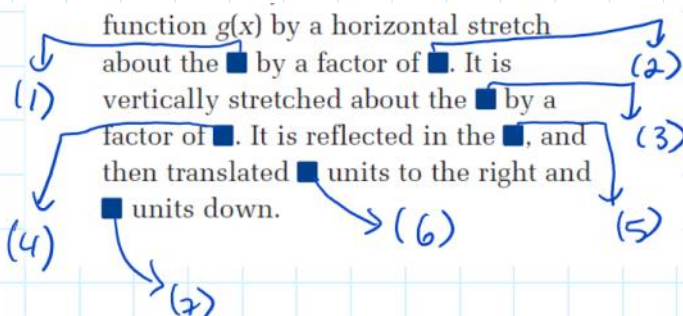
(1) a : V. stretch or/and V. refl.
 (2) b : H. stretch or/and H. reflection
 (3) h : H. shift
 (4) k : V. shift

Additionally we can say something about the order.

$$g(x) = -3f(4x - 16) - 10$$

(1) -3 : later
 (2) $4x - 16$: first
 (3) -10 : later or last

Let's fill in the blanks, or rather the squares:



(1) y-axis

b/c all horiz. stretches
are such

(2) $\frac{1}{4}$

$$g(x) = -3f(\underset{\downarrow}{4x-16}) - 10$$

if the horizontal stretch happen first, then
we need brackets:

$$4x-16 = 4(x-\frac{16}{4}) = 4(x-4)$$

$$g(x) = -3f(\underset{\downarrow}{4(x-4)}) - 10$$

the stretch factor is upside
down (the reciprocal) $\frac{1}{4}$

(3) x-axis

b/c all vertical stretches
are such

(4) 3

we don't include the
minus b/c the minus represents
the reflection

(5) x-axis

a vertical reflection is always
into the x-axis

(6) 4

remember that we had to
apply brackets:

$$f(4x-16) = f(4(x-4))$$

(7) 10

although $\times$ in the formula

(7) 10

although k in the formula

k at the top is actually,
 $k = -10$

the wording for the 7-th
square is

10 units down

the word down implies the
minus in its direction.