

3) (6,9) Find point on:

a.) $g(2x) - 5$

Compressed horizontally sf $\frac{1}{2}$
Vertical translation down 5

$(\frac{1}{2} \cdot 6, 9) = (3, 9)$

$(3, 9 - 5) = (3, -14)$

b.) $3g(x) + 1$

Vertical stretch sf 3
Vertical translation up 1

$(6, 9 \cdot 3) = (6, 27)$

$(6, 27 + 1) = (6, 28)$

c.) $-g(\frac{1}{3}(x+4)) - 8$
 $-g(\frac{1}{3}(x+4)) + 8$

Horizontal stretch sf 3
Horizontal translation left 4
Reflect across x-axis (vertically)
Vertical translation up 8

$(6 \cdot 3, -9) = (18, -9)$

$(18 - 4, -9) = (14, -9)$

$(14, -9 \cdot -1) = (14, 9)$

$(14, 9 + 8) = (14, 17)$

d.) $\frac{1}{2}g(-5x-15) - 8$
 $\frac{1}{2}g(-5(x+3)) - 8$

Horizontal compression sf $\frac{1}{5}$
Reflect across y-axis
Horizontal translation left 3

Vertical compression sf $\frac{1}{2}$

Vertical translation down 8

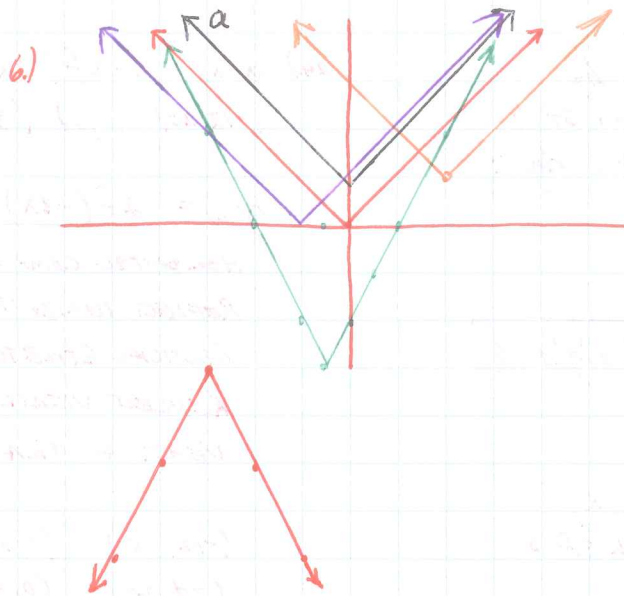
$(6 \cdot \frac{1}{5}, -9) = (\frac{6}{5}, -9)$

$(\frac{6}{5}(-1), -9) = (-\frac{6}{5}, -9)$

$(-\frac{6}{5} - 3, -9) = (-\frac{6}{5} - \frac{15}{5}, -9) = (-\frac{21}{5}, -9)$

$(-\frac{21}{5}, -9 \cdot \frac{1}{2}) = (-\frac{21}{5}, -\frac{9}{2})$

$(-\frac{21}{5}, -\frac{9}{2} - 8) = (-\frac{21}{5}, -\frac{9}{2} - \frac{16}{2}) = (-\frac{21}{5}, -\frac{25}{2})$



p. 261-264
3-45 m 3
(3, 6, 15, 10, 18, 21, 24)

a) $g(x) = f(x) + 1$
TRANSLATION UP 1

b) $h(x) = f(x+1)$
TRANSLATION LEFT 1

c) $j(x) = f(2x+1) - 3$
 $= f(2(x+\frac{1}{2})) - 3$
HORIZONTAL COMP SF $\frac{1}{2}$
HORIZONTAL TRANSL LEFT $\frac{1}{2}$
VERTICAL TRANSL DOWN 3

d) $K(x) = \frac{1}{2}f(2x-4) + 1$
 $= \frac{1}{2}f(2(x-2)) + 1$

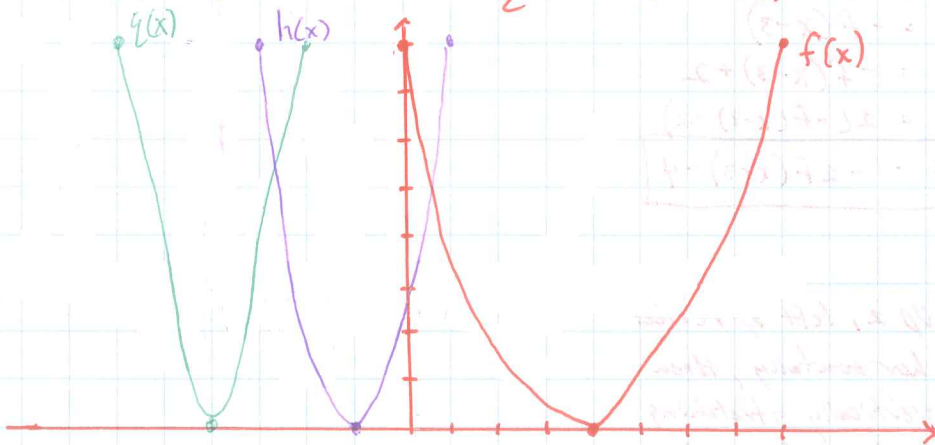
HORIZONTAL COMP SF $\frac{1}{2}$
HORIZONTAL TRANSL RT 2
VERTICAL COMP SF $\frac{1}{2}$
VERTICAL TRANSL UP 1

e) $m(x) = -\frac{1}{2}f(4x+12) - 3$
 $= -\frac{1}{2}f(2(2x+6)) - 3$

HORIZONTAL COMP SF $\frac{1}{4}$
HORIZONTAL TRANSLATION LEFT 3
VERTICAL COMP SF $\frac{1}{2}$
REFLECT ACROSS X-AXIS
VERTICAL TRANSLATION DOWN 3

15.) $h(x) = f(2x+6)$

16.) $g(x) = f(2(x+6))$



* $h(x) = f(2(x+3))$
Horizontal compression sf $\frac{1}{2}$
Horizontal translation left 3

* $g(x) = f(2(x+6))$
Horizontal compression sf $\frac{1}{2}$
Horizontal translation left 6

18.) $y = f(2x-6)$ obtained by
horizontal compression sf $\frac{1}{2}$
then horizontal shift 6 right?

$$y = f(2(x-3))$$

No, horizontal shift right 3

21.) Left 4, reflect across x,
up 2, vertical stretch sf 3

$$\begin{aligned} g &= f(x+4) \\ &= -f(x+4) \\ &= -f(x+4) + 2 \\ &= 3(-f(x+4) + 2) \end{aligned}$$

$$g(x) = -3f(x+4) + 6$$

22.) Right 3, reflected vertically across
x-axis, down 2, stretched vert
factor of 2

$$\begin{aligned} g &= f(x-3) \\ &= -f(x-3) \\ &= -f(x-3) - 2 \\ &= 2(-f(x-3) - 2) \end{aligned}$$

$$g(x) = -2f(x-3) - 4$$

23.) Up 2, left 3, reflect
horizontally, then
vertically, stretching
vertically factor of 2.

$$\begin{aligned} g &= f(x) + 2 \\ g(x) &= f(x+3) + 2 \\ &= f(-x+3) + 2 \\ &= -(f(-x+3) + 2) \\ &= 2(f(-x+3) + 2) \end{aligned}$$

$$h(x) = 2f(-x+3) - 4$$

$$24.) g(x) = 10 - 2f(-3x)$$

$$(-12, 20) \quad (0, 6) \quad (36, -2)$$

$$g(x) = -2f(-3x) + 10$$

HORIZONTAL COMPRESSION SF $\frac{1}{3}$

REFLECT HORIZONTALLY ABOUT Y-AXIS

VERTICAL STRETCH SF 2

REFLECT VERTICALLY ABOUT X-AXIS

VERTICAL TRANSLATION UP 10

$$(-12, 20) \quad (0, 6) \quad (36, -2)$$

$$(-4, 20) \quad (0, 6) \quad (12, -2)$$

$$(4, 20) \quad (0, 6) \quad (-12, -2)$$

$$(4, 40) \quad (0, 12) \quad (-12, -4)$$

$$(4, -40) \quad (0, -12) \quad (-12, 4)$$

$$(4, -30) \quad (0, -2) \quad (-12, 14)$$