Pre-Calculus   Name: _____

Dilations Practice WS
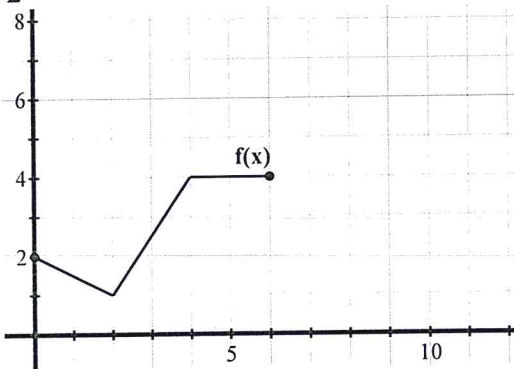
1. Using the parent function $y = f(x)$, write an equation after the given transformations.

    a. Vertical dilation by a factor of 5

    b. Horizontal dilation by a factor of 4

    c. Vertical dilation by a factor of $\dfrac{1}{3}$

    d. Horizontal dilation by a factor of $\dfrac{1}{8}$

    e. Vertical dilation by a factor of 2 and a translated left 7

    f. Horizontal dilation by a factor of $\dfrac{1}{8}$ and translated up 3

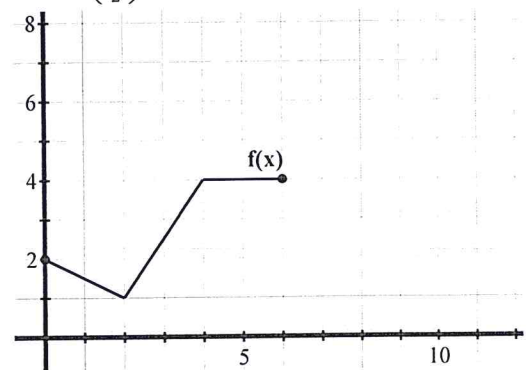2. Graph each of the following on separate a separate set of axis.

    a. $y = 3|x|$

    b. $y = \left|\dfrac{x}{2}\right|$

    c. $\dfrac{y}{3} = x^2$

    d. $y = \left(\dfrac{x}{2}\right)^2$

    e. $\dfrac{y}{2} = \sqrt{x}$

    f. $y = \sqrt{\dfrac{x}{\frac{1}{2}}}$

    g. $\dfrac{y}{4} = |x|$

    h. $y = \left|\dfrac{x}{\frac{1}{5}}\right|$

    i. $\dfrac{y}{\frac{1}{2}} = x^2$

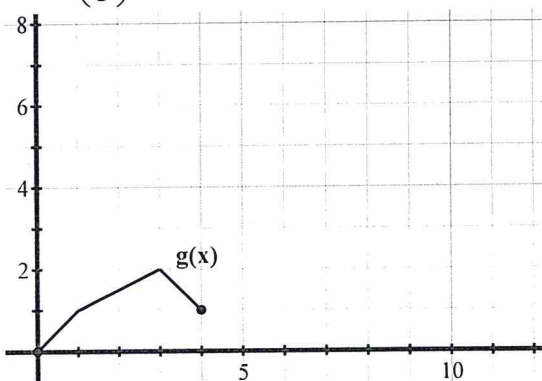3. Given the graph of $y = f(x)$ or $y = g(x)$, sketch the graph.
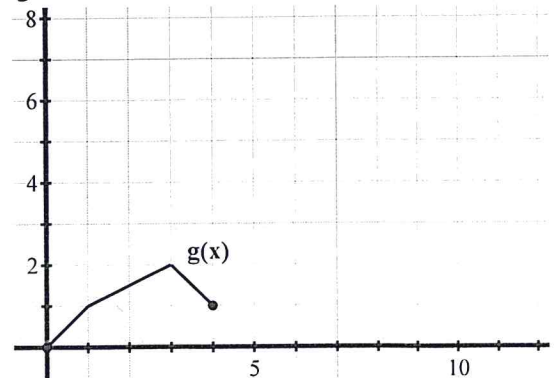
    a. $\dfrac{y}{2} = f(x)$

    b. $y = f\left(\dfrac{x}{\frac{1}{2}}\right)$

    c. $y = g\left(\dfrac{x}{3}\right)$

    d. $\dfrac{y}{3} = g(x)$

Dilations Practice WS   Name: <u>answer key</u>

1. Using the parent function $y = f(x)$, write an equation after the given transformations.

    a. Vertical dilation by a factor of 5

    $$y = 5f(x)$$

    b. Horizontal dilation by a factor of 4

    $$y = f\left(\frac{x}{4}\right)$$

    c. Vertical dilation by a factor of $\frac{1}{3}$

    $$y = \frac{1}{3}f(x)$$

    d. Horizontal dilation by a factor of $\frac{1}{8}$

    $$y = f\left(\frac{x}{\frac{1}{8}}\right)$$

    e. Vertical dilation by a factor of 2 and a translated left 7

    $$y = 2f(x-7)$$

    f. Horizontal dilation by a factor of $\frac{6}{\frac{3}{8}}$ and translated up 3

    $$y = 3 + f\left(\frac{x}{6}\right)$$

2. Graph each of the following on separate a separate set of axis.

    a. $y = 3|x|$

    b. $y = \left|\frac{x}{2}\right|$

    c. $\frac{y}{3} = x^2$

    d. $y = \left(\frac{x}{2}\right)^2$

    e. $\frac{y}{2} = \sqrt{x}$
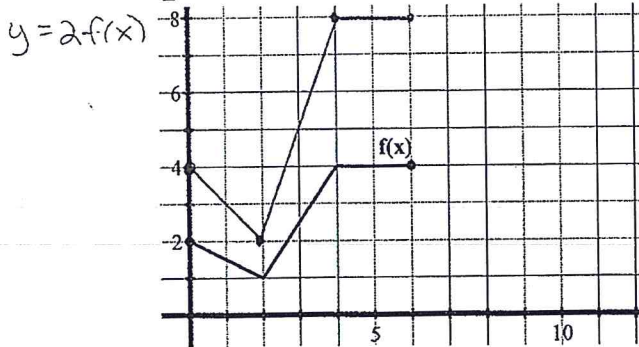
    f. $y = \sqrt{\frac{x}{\frac{1}{2}}}$

    g. $\frac{y}{4} = |x|$

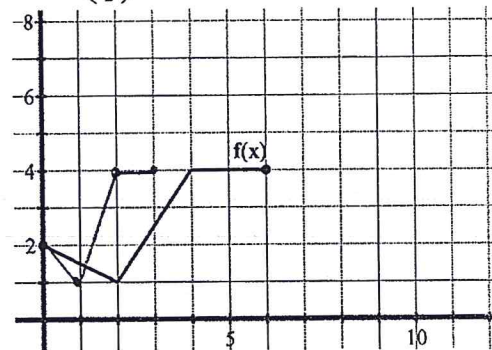   h. $y = \left|\frac{x}{\frac{1}{5}}\right|$

    i. $\frac{y}{\frac{1}{2}} = x^2$

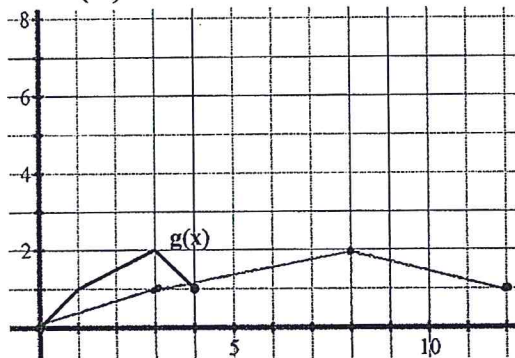3. Given the graph of $y = f(x)$ or $y = g(x)$, sketch the graph.

    a. $\frac{y}{2} = f(x)$ vertical dilation by a factor of 2
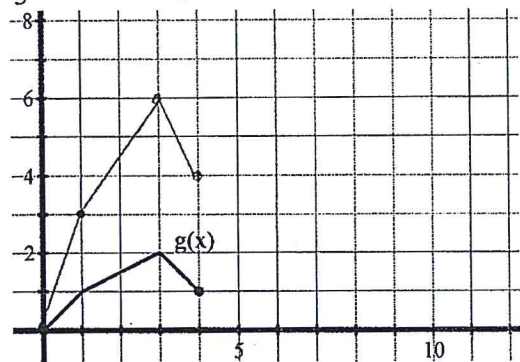
    $y = 2f(x)$

    b. $y = f\left(\frac{x}{\frac{1}{2}}\right)$ horizontal dilation by a factor of $\frac{1}{2}$
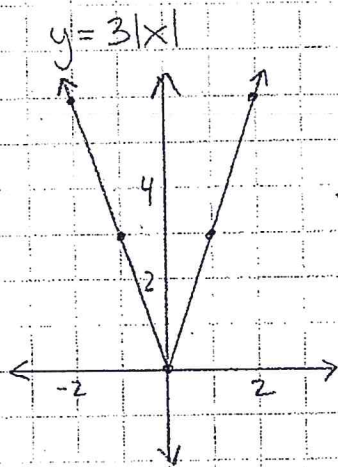

    c. $y = g\left(\frac{x}{3}\right)$ horizontal dilation by a factor of 3
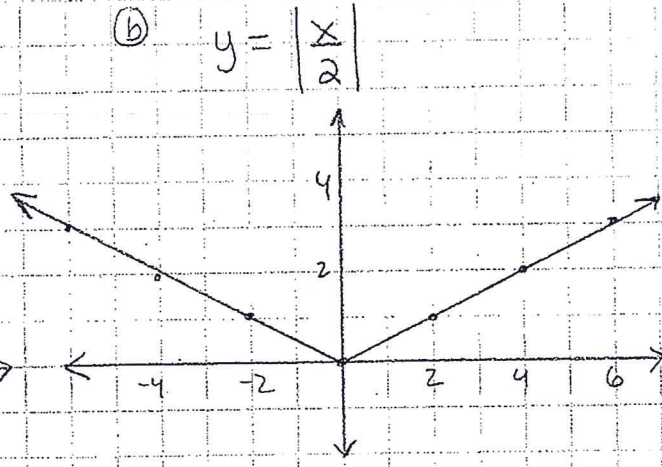

    d. $\frac{y}{3} = g(x)$ vertical dilation by a factor of 3
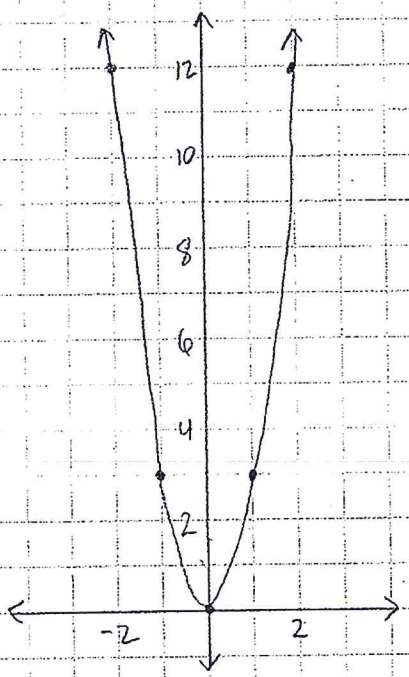
    $y = 3g(x)$

(2a) $y = 3|x|$

(b) $y = \left|\dfrac{x}{2}\right|$
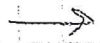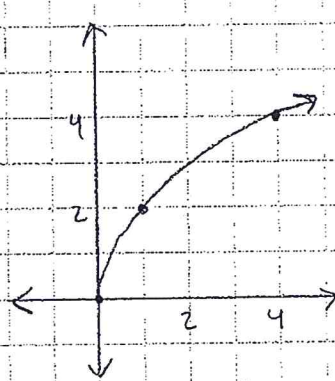
(c) $\dfrac{y}{3} = x^2$

$y = 3x^2$

(d) $y = \left(\dfrac{x}{2}\right)^2$

(e) $\dfrac{y}{2} = \sqrt{x}$

$y = 2\sqrt{x}$

(f) $y = \sqrt{\dfrac{x}{\frac{1}{2}}}$

(g) $\dfrac{y}{4} = |x|$

$y = 4|x|$

(h) $y = \left|\dfrac{x}{\frac{1}{5}}\right|$

(i) $\dfrac{y}{2} = x^2$