U1 L7B Transformations: Stretches & Shrinks — Practice

Name: _____ HR: _____

Skills: Read function notation to find a, b, h, and k; map points; sketch transformed parent functions; and write equations from graphs.

Review & Prerequisites

1. *Review (1.7A)* Find h and k, then describe how $g(x)=-f(x+3)+1$ compares to the graph of f.	**2.** *Review (1.7A)* Write an equation for $f(x)=x^2$ shifted 4 units right and 1 unit down.	**3.** *Review (1.6)* Let f(x) = [[x]] + 2. Find f(−1.5).

Group A — Read the Left Side

Find a, b, h, and k, then describe how g compares to f. Outside → vertical (does what it says). Inside → horizontal (does the opposite).

4. $g(x)=4f(x)$ a = b = h = k =	**5.** $g(x)=f(4x)$ a = b = h = k =
6. $g(x)=\frac{1}{3}f(x)$ a = b = h = k =	**7.** $g(x)=f\left(\frac{1}{3}x\right)$ a = b = h = k =
8. $g(x)=3f(2x)$ a = b = h = k =	**9.** $g(x)=-2f(x)+5$ a = b = h = k =
10. $g(x)=\frac{1}{2}f(x-3)$ a = b = h = k =	**11.** $g(x)=f(2x)-4$ a = b = h = k =
12. $g(x)=2f(-x)+1$ a = b = h = k =	**13.** $g(x)=-f(3x)$ a = b = h = k =

Group B — Mapping Points

The point (2, −6) is on the graph of f. Find the matching point on g. Use $(x,y)\rightarrow\left(\frac{x}{\square}+h, a\,y+k\right)$.

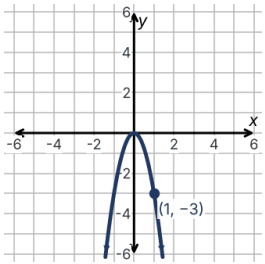
14. $g(x)=f(x)+4$	**15.** $g(x)=f(x-3)$	**16.** $g(x)=2f(x)$
17. $g(x)=f(2x)$	**18.** $g(x)=-\frac{1}{2}f(x)$	**19.** $g(x)=3f(x+1)-2$

20. The graph of $y=f(x)$ passes through the points (0, 1), (1, 2), and (2, 3). Find the corresponding points on the graph of $y=f(x+2)-1$. *(#67)*

Group C — Write an Equation from a Graph

Each graph is a transformation of the given parent. Use the labeled point(s) to find the stretch factor a.

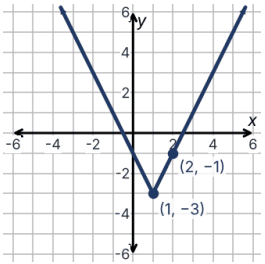
21. Parent: x^2



a = h = k =

$g(x)$ =

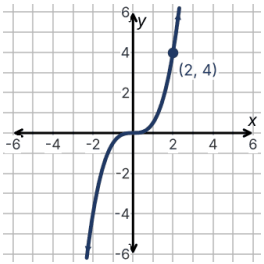
22. Parent: $|x|$



a = h = k =

$g(x)$ =

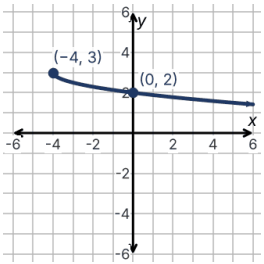
23. Parent: x^3



a = h = k =

$g(x)$ =

24. Parent: $\sqrt{x}$



a = h = k =

$g(x)$ =

Group D — Identify, Describe, Rewrite, and Sketch

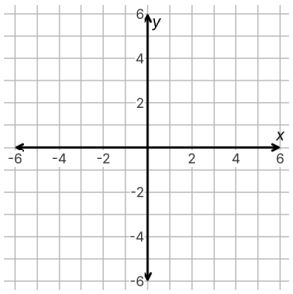
g is related to a parent function from Section 1.6. (Textbook #29–38)

25. $g(x)=2\sqrt{x}$ *(#29)*

(a) Parent f:

(b) a = b =
h = k =

(c) f-notation: $g(x)$ =

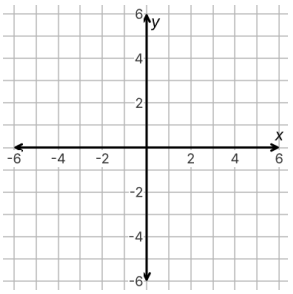


26. $g(x)=|2x|$ *(#33)*

(a) Parent f:

(b) a = b =
h = k =

(c) f-notation: $g(x)$ =

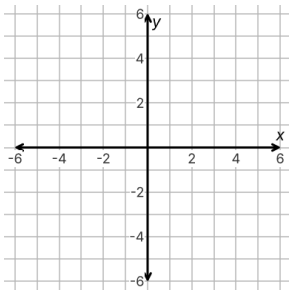


27. $g(x)=-2x^2+1$ *(#35)*

(a) Parent f:

(b) a = b =
h = k =

(c) f-notation: $g(x)$ =

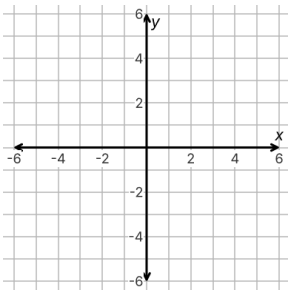


28. $g(x)=\frac{1}{2}x^2-2$ *(#36)*

(a) Parent f:

(b) a = b =
h = k =

(c) f-notation: $g(x)$ =

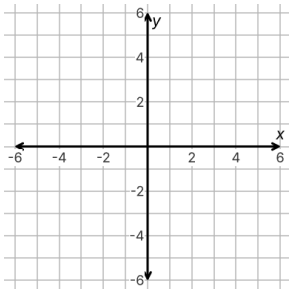


29. $g(x)=3|x-1|+2$ *(#37)*

(a) Parent f:

(b) a = b =
h = k =

(c) f-notation: $g(x)$ =

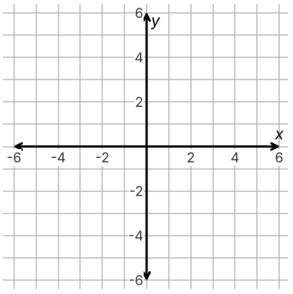


30. $g(x)=-2|x+1|-3$ *(#38)*

(a) Parent f:

(b) a = b =
h = k =

(c) f-notation: $g(x)$ =



Group E — Application

31. Describing Profits *(#71)* Management predicted that profits from a new product would follow the graph of f(t). Write the actual profits g(t) in terms of f.

(a) The profits were only three-fourths as large as expected.

$g(t)$ =

(b) The profits were consistently $10,000 greater than predicted.

$g(t)$ =

(c) There was a two-year delay in introducing the product. After sales began, profits grew as expected.

$g(t)$ =