

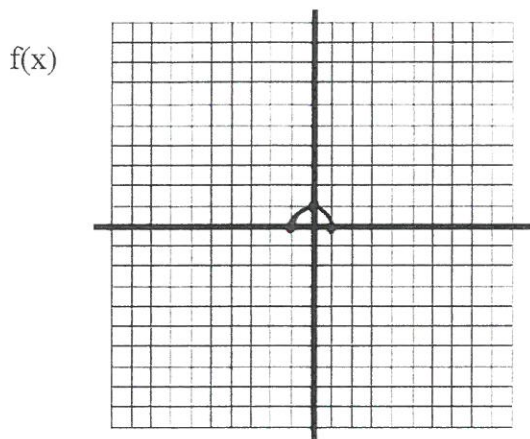
Section 1-3
Dilations and Translations of Graphs

Dilation: graph magnified by a factor

Pre-image: original function $f(x)$

Translation: graph slides to the left, right, up or down

image: graph after transformations



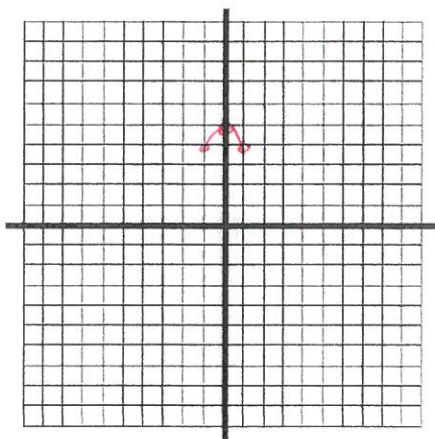
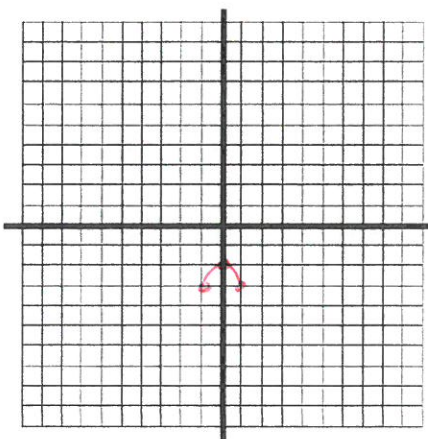
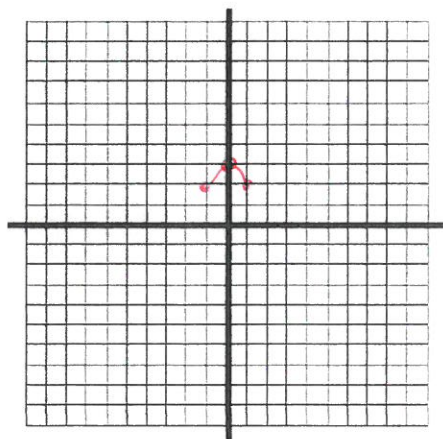
$$f(x) = \sqrt{1-x^2}$$

semi-circle
(-1,0) (0,1) (1,0)

$g(x) = 2 + f(x)$ vt of 2

$g(x) = -3 + f(x)$ vt of -3

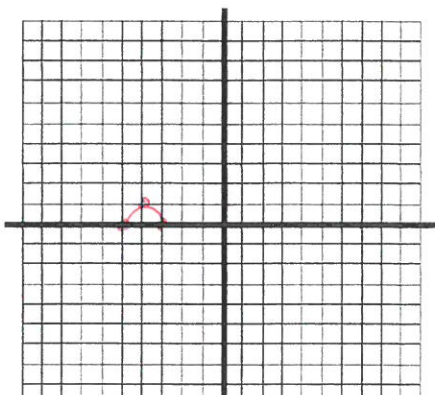
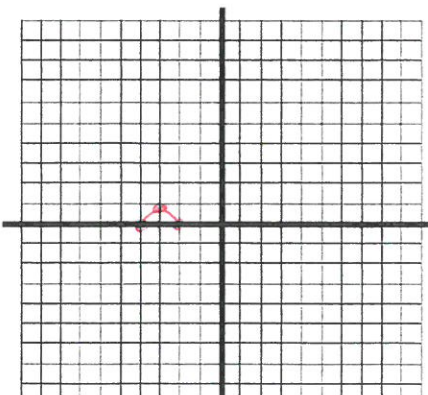
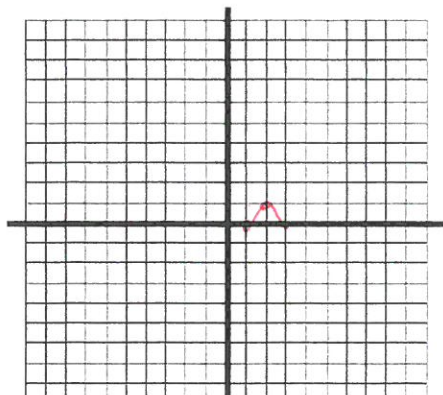
$g(x) = 4 + f(x)$ vt of 4



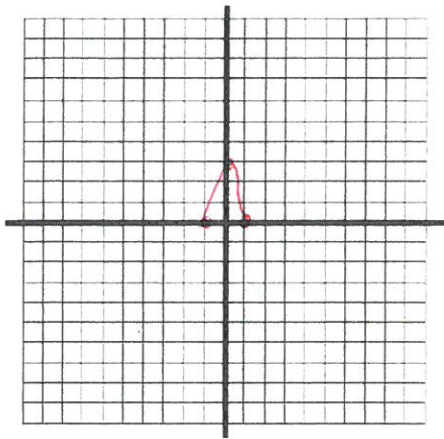
$g(x) = f(x - 2)$ ht of 2

$g(x) = f(x + 3)$ ht of -3

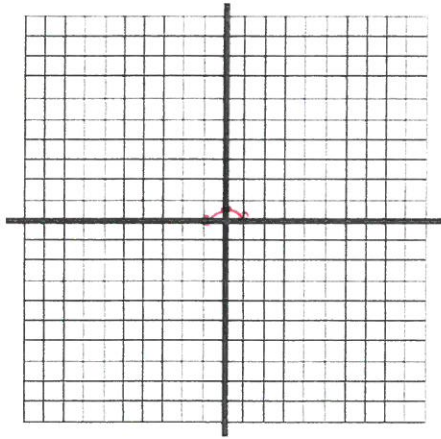
$g(x) = f(x + 4)$ ht of -4



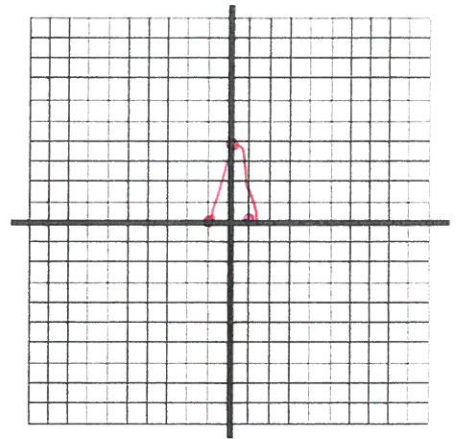
$$g(x) = 3f(x) \quad \text{vd of } 3$$



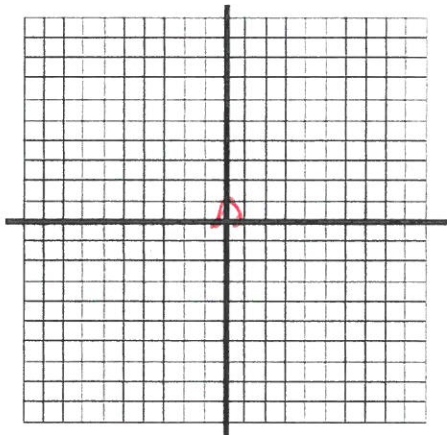
$$g(x) = \frac{1}{2}f(x) \quad \text{vd of } \frac{1}{2}$$



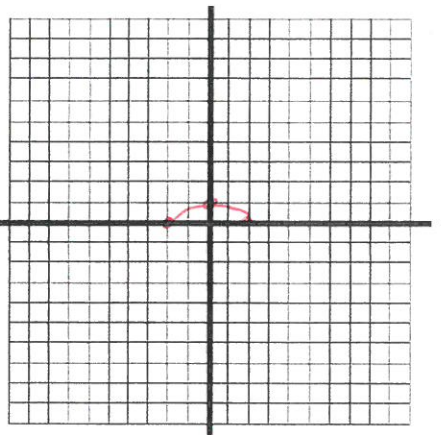
$$g(x) = 4f(x) \quad \text{vd of } 4$$



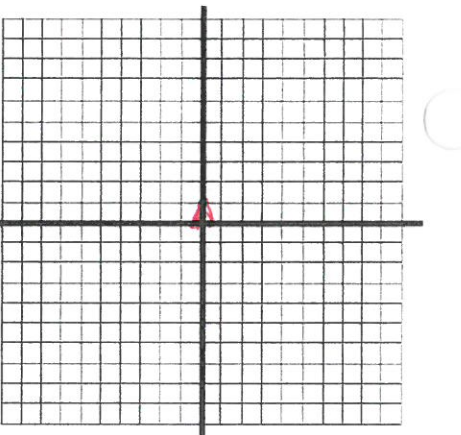
$$g(x) = f(3x) \quad \text{hd of } \frac{1}{3}$$



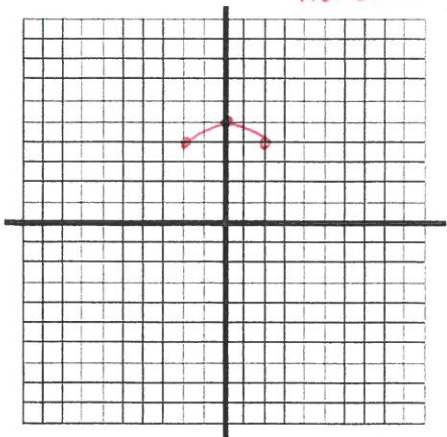
$$g(x) = f(\frac{1}{2}x) \quad \text{hd of } 2$$



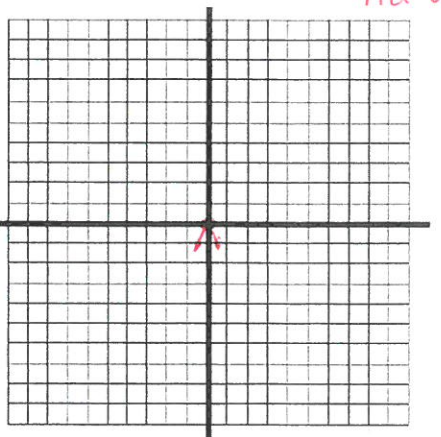
$$g(x) = f(4x) \quad \text{hd of } \frac{1}{4}$$



$$g(x) = 4 + f(\frac{1}{2}x) \quad \text{vt of } 4 \\ \text{hd of } 2$$

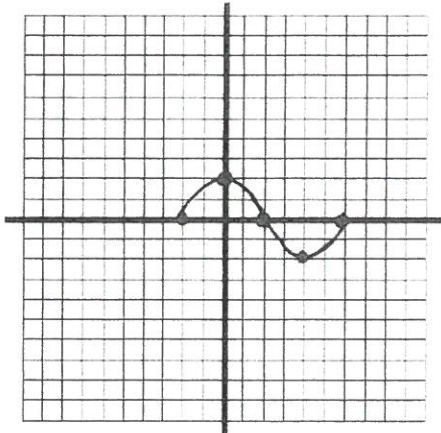


$$g(x) = -1 + f(3x) \quad \text{vt of } -1 \\ \text{hd of } \frac{1}{3}$$



Warm Up 1-3 Continued

Given $f(x)$

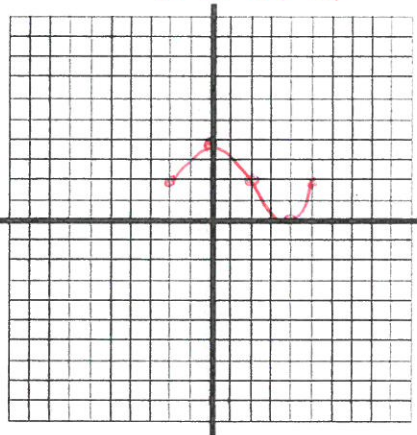


- $(-2, 0)$
- $(0, 2)$
- $(2, 0)$
- $(4, -2)$
- $(6, 0)$

Graph

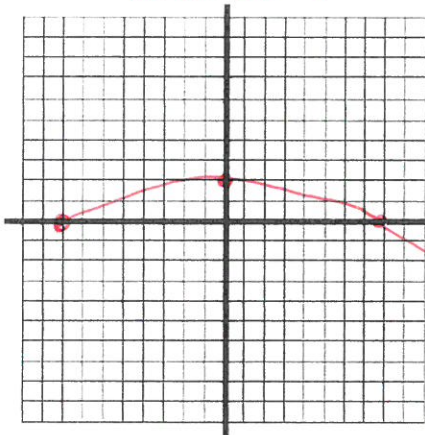
1. $g(x) = 2 + f(x)$

v.t. of 2



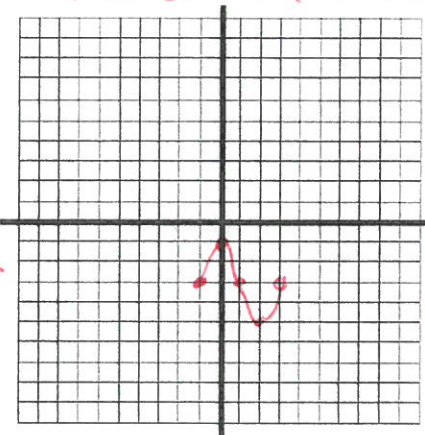
2. $g(x) = f(\frac{1}{4}x)$

h.d. of 4



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

v.t. of -3 & h.d. of 1/2



- $(-1, -3)$
- $(0, -1)$
- $(1, -3)$
- $(2, -5)$
- $(3, -3)$

