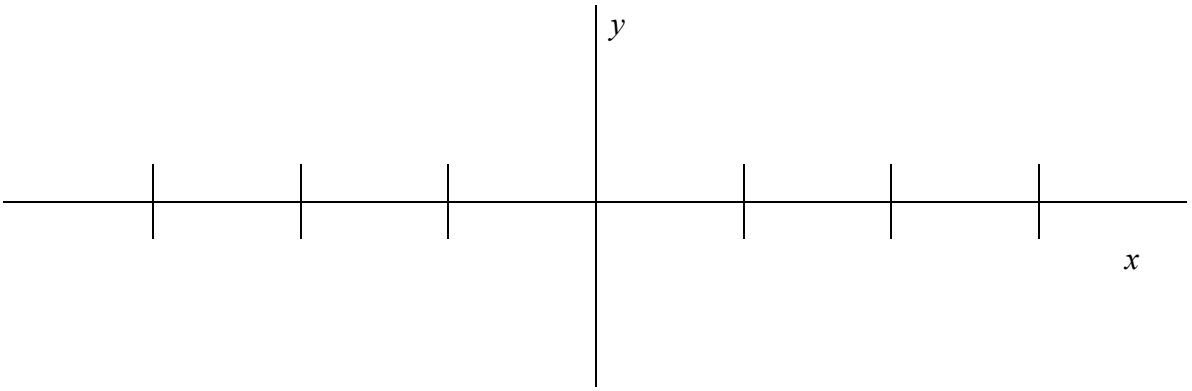
Section 5.5

Starting with the basic sine curve, y = sin x, let us look at variations of the basic graph.

VERTICAL STRETCHING

Draw y = sin x. Next, draw y = 2sin x on the same curve.



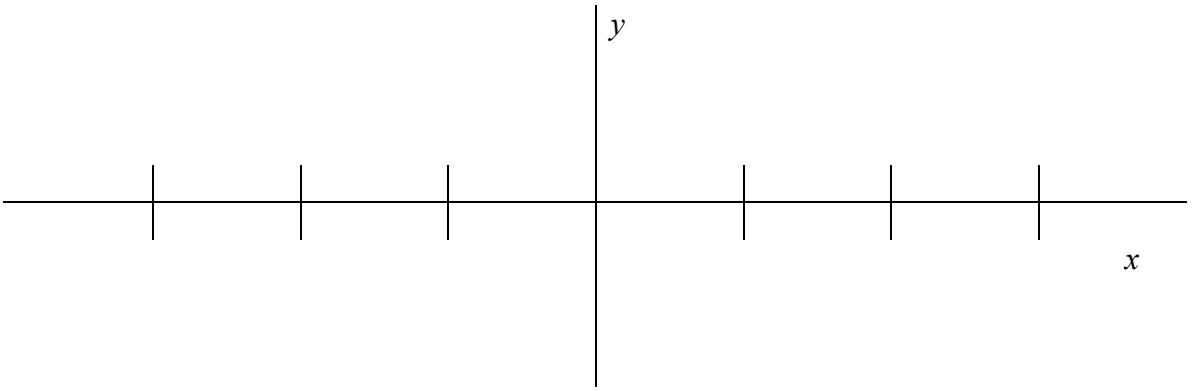
x	-2π	-3π/2	-π	-π/2	0	π/2	π	3π/2	2π
sin x									
2sin x									

In general, the graph of f(x) = kg(x) is a vertical stretch from the graph of g.

NOW DRAW y = –2sin x on the axis above.

HORIZONTAL STRETCHING OR COMPRESSION

Draw y = sin x. Next, draw y = sin (2x) on the same curve.

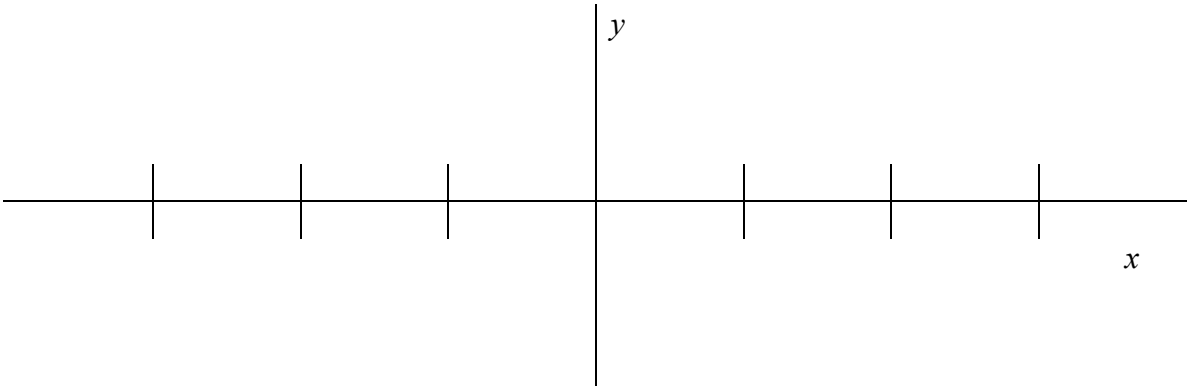


x	-π	-3π/4	-π/2	-π/4	0	π/4	π/2	3π/4	π
2x	-2π	-3π/2	-π	-π/2	0	π/2	π	3π/2	2π
sin 2x									

In general, the graph of f(x) = g(kx) is a squeezing or compression of 1/k from the graph of f if $|k| > 1$. If $|k| < 1$ then the graph will stretch horizontally.

HORIZONTAL SHIFTING

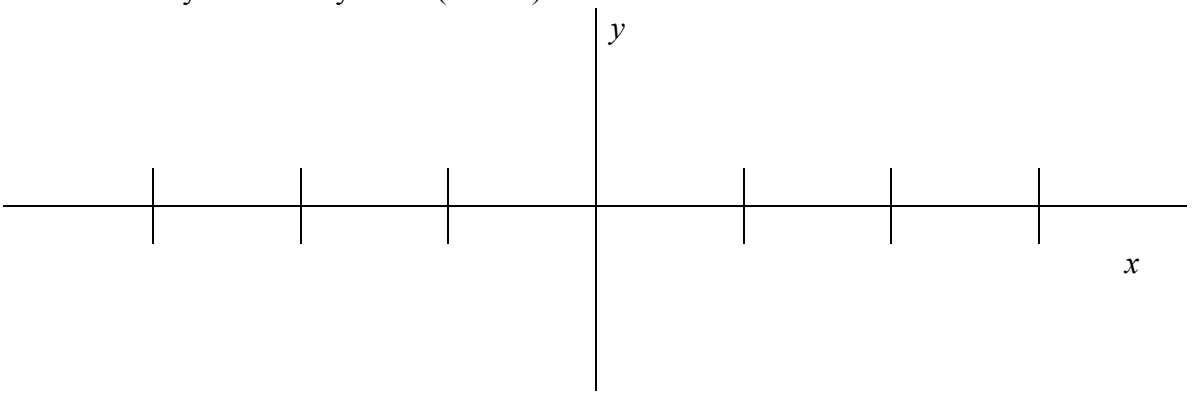
Draw y = sin x. Next, draw y = sin (x – π/2) on the same curve.



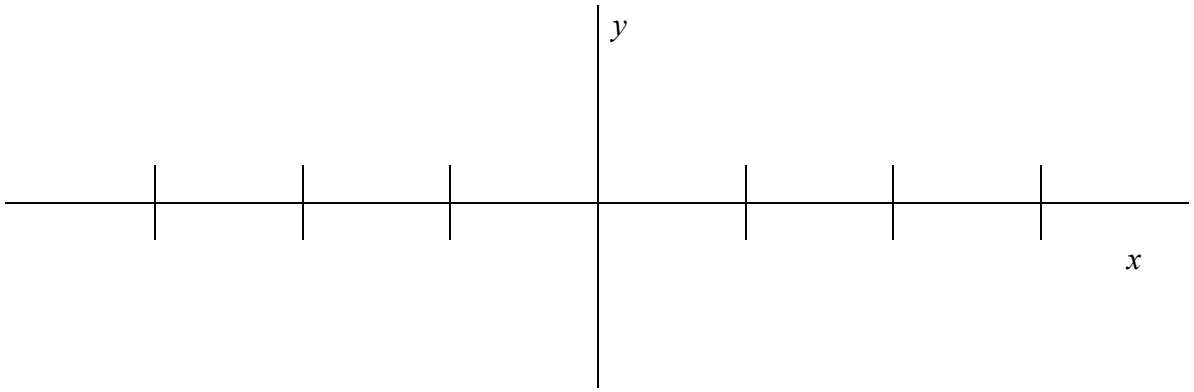
x	-2π	-3π/2	-π	-π/2	0	π/2	π	3π/2	2π
x- π/2	-5π/2	-2π	-3π/2	-π	-π/2	0	π/2	π	3π/2
sin (x-π/2)									

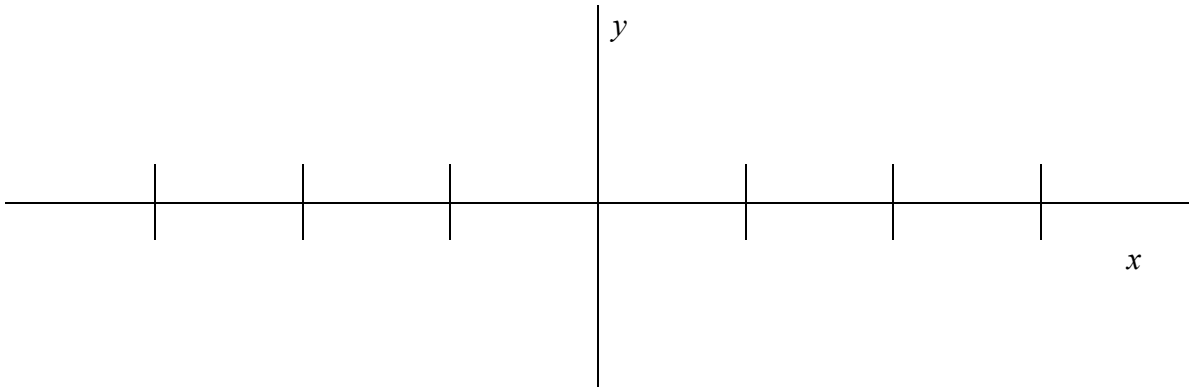
In general, the graph of f(x) = g(x-s) is a horizontal shift (right or left) of s units from the graph of g.

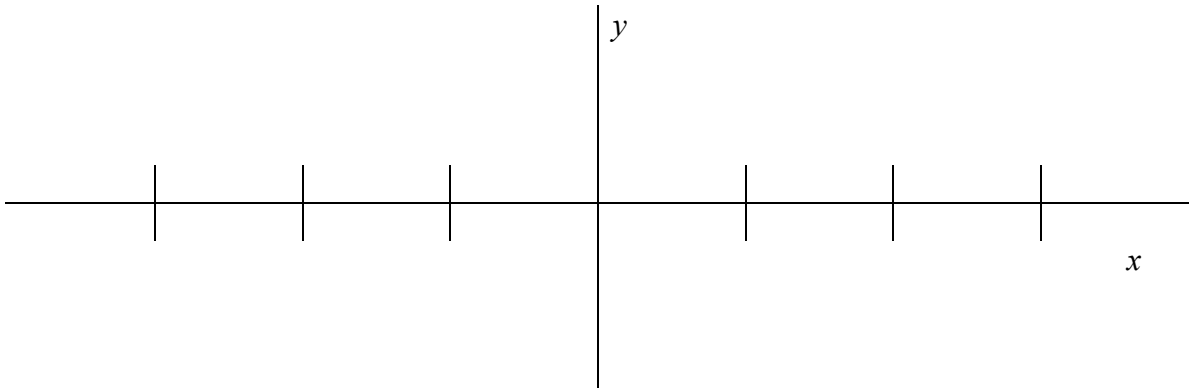
COMPARE y = sin x to y = cos (x - π/2)



NOW WE WILL WORK EGRADE PROBLEMS. THE NEXT PAGE IS PROVIDED IN CASE YOU WANT TO COPY ANY OF THE PROBLEMS WE WORK. YOU MAY WANT TO PRINT MORE THAN ONE PAGE.


y
x


y
x


y
x