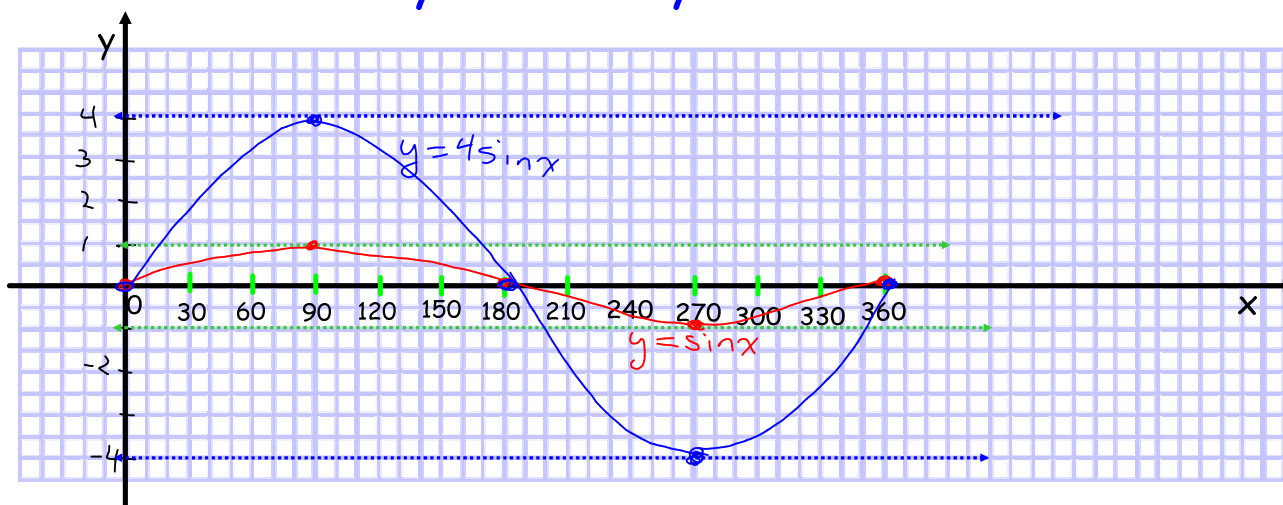


5.5 Transformation of the Sine Function

Transformation of the Sine Function

Ex 1: Graph the following functions for one full cycle on the same grid:

$y = \sin x$ and $y = 4\sin x$



Compare the following functions by looking at the following characteristics:

$y = \sin x$

a) period 360°

b) max 1

c) min -1

d) equation of the axis:

$y = 0$

e) amplitude 1

$y = 4\sin x$

a) period 360°

b) max 4

c) min -4

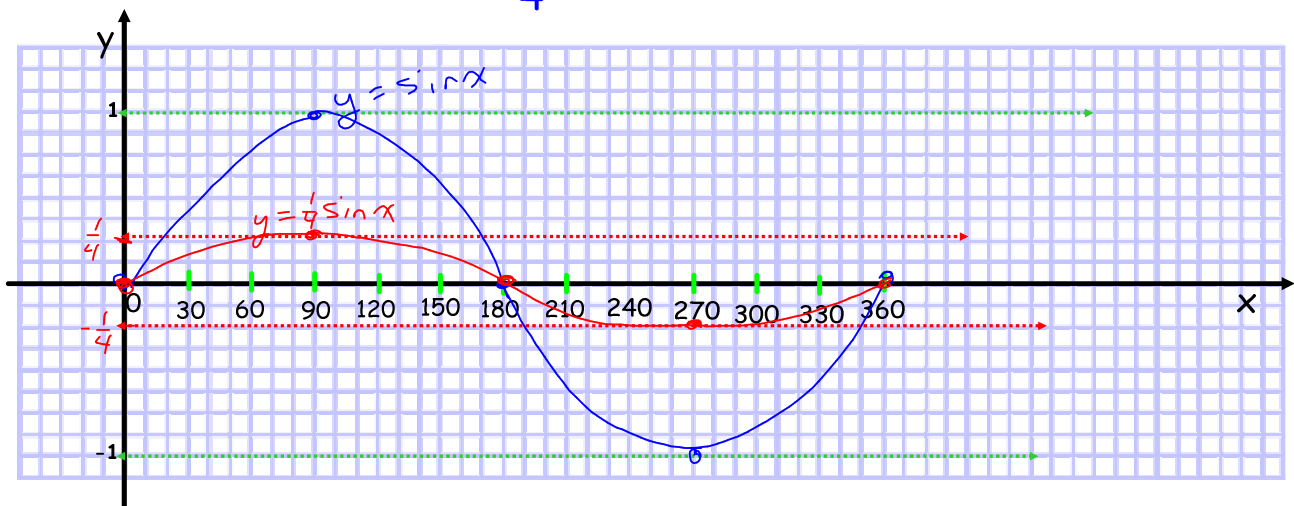
d) equation of the axis:

$y = 0$

e) amplitude 4

Ex 2: Graph the following functions, for one full cycle, on the same grid:

$y = \sin x$ and $y = \frac{1}{4} \sin x$



Compare the following functions by looking at the following characteristics:

$y = \sin x$

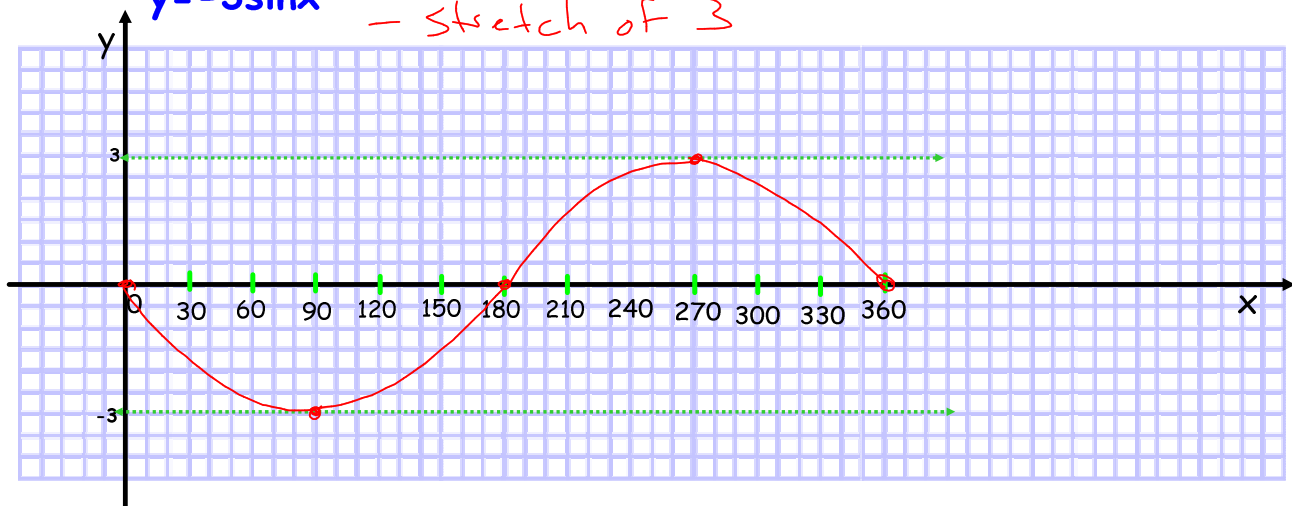
- a) period 360
- b) max 1
- c) min -1
- d) equation of the axis:
 $y = 0$
- e) amplitude 1

$y = \frac{1}{4} \sin x$

- a) period 360
- b) max $\frac{1}{4}$
- c) min $-\frac{1}{4}$
- d) equation of the axis:
 $y = 0$
- a) amplitude $\frac{1}{4}$

Ex 3: Graph the following function, for one full cycle:

$y = -3\sin x$ - reflection
- stretch of 3



List the characteristics:

$y = -3\sin x$

a) period 360

b) max 3

c) min -3

d) equation of the axis:

$y = 0$

e) amplitude 3

Putting it all together:Ex 4: Describe the following transformations

a) $y = \sin(x - 30^\circ) + 1$

1. Shift right 30°
2. Shift up 1 unit

b) $y = 2\sin(x + 45^\circ) - 1$

Stretch BEFORE
you move!

1. Stretch of 2
2. Shift left 45°
3. Shift down 1 unit

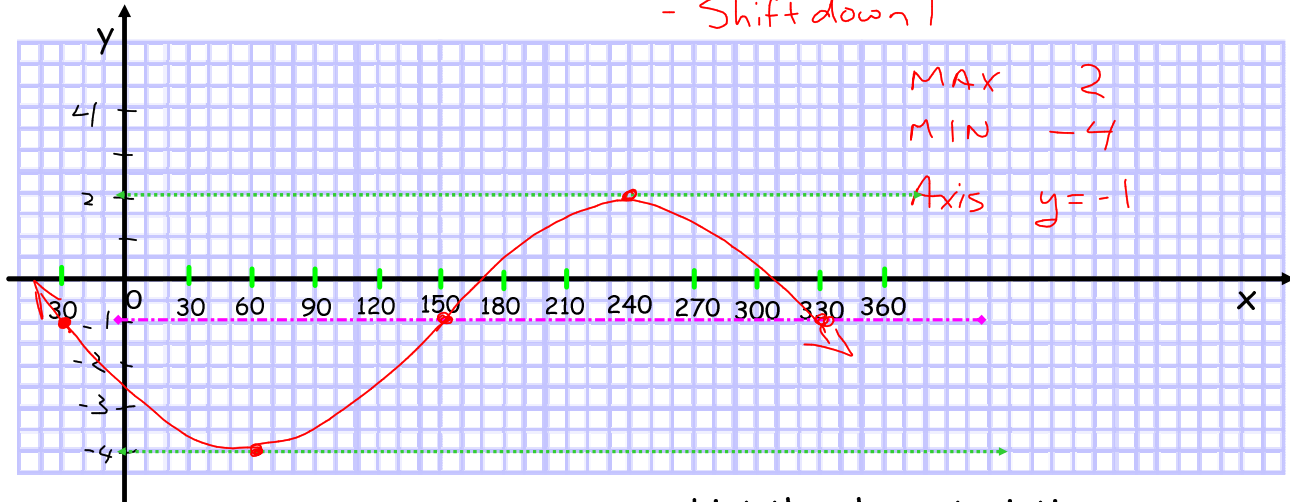
In General:

$$y = a \sin(x - c^\circ) + d$$

- Stretch factor (amplitude)
- Reflection
- Shift L/R (horiz.)
- Shift U/D (vert.)

Ex 5: Graph $y = -3\sin(x+30^\circ) - 1$

- Stretch of 3
- Reflection
- Shift left 30°
- Shift down 1



MAX 2
MIN -4
Axis $y = -1$

List the characteristics:

a) period 360

b) max 2

c) min -4

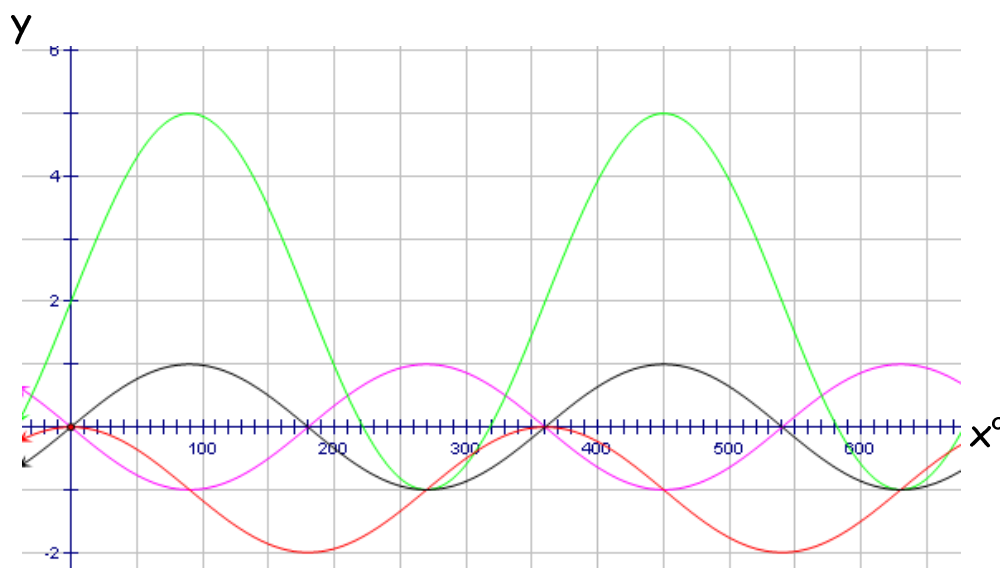
d) equation of the axis:

$y = -1$

e) amplitude 3

$D = \{ x \in \mathbb{R} \}$

$R = \{ -4 \leq y \leq 2, y \in \mathbb{R} \}$



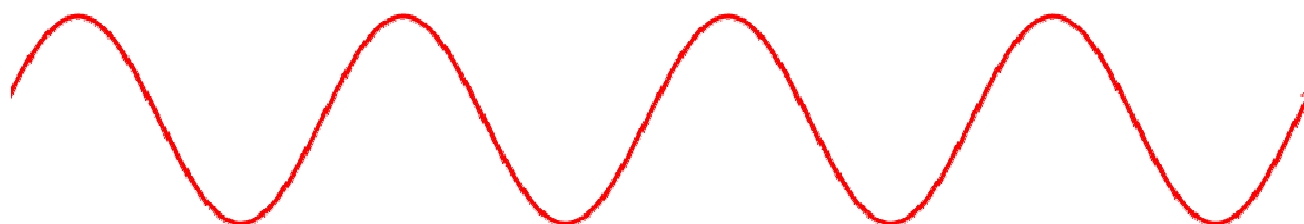
Ex 6: Find the equations of each graph:

black: $y = \sin x$

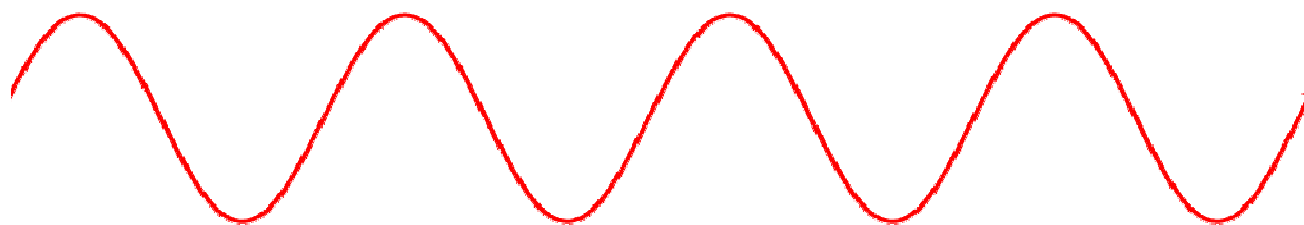
pink: $y = -\sin x$

red: $y = -\sin(x - 90) - 1$ OR $y = \sin(x + 90) - 1$

green: $y = 3\sin x + 2$



Hmwk:
p 373
#4, 5 cf, 6 cf, 7, 8, 13, 15, 16, 17



Start your Test Review:

page 378-380 chapter 6 review and Practice Test

