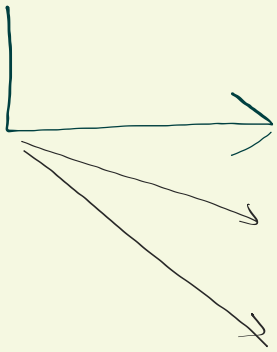


Agenda

- 1 Questions from the Review Assignments
- 2 Brief Intro to Ch. 7
 - ~ Some Soh-Cah-Toa Review
 - ~ Right Triangle Shortcut

HW Questions



Solutions for all assignments this week are posted.

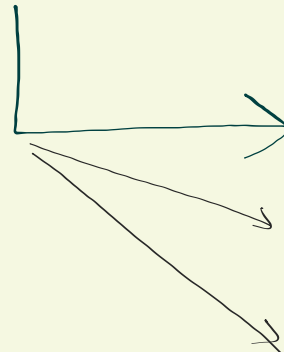
[including Yesterday's]

From now on we will use
a laminated class set
of reference sheets
for all tests.

Extra textbooks
have arrived 😊

come up right
now if you
still have not been
issued a textbook.

HW Questions



149a

$$\textcircled{\text{I}} \quad x + y + z = 3$$

$$\textcircled{\text{II}} \quad 2x - y + 2z = 6$$

$$\textcircled{\text{III}} \quad 3x + 2y - z = 13$$

$$\textcircled{\text{A}} \quad 3x + 3z = 9$$

$$\begin{array}{l} \text{II} \quad 2x - y + 2z = 6 \\ \text{III} \quad 3x + 2y - z = 13 \end{array} \begin{array}{l} \xrightarrow{2} \\ \xrightarrow{1} \end{array} \begin{array}{l} 4x - 2y + 4z = 12 \\ 3x + 2y - z = 13 \\ \hline \textcircled{\text{B}} \quad 7x + 3z = 25 \end{array}$$

$$\textcircled{\text{A}} \quad 3x + 3z = 9$$

$$\textcircled{\text{B}} \quad 7x + 3z = 25$$

149 b

$$\begin{array}{l} \textcircled{\text{I}} \quad x + y + 4z = 5 \\ \textcircled{\text{II}} \quad -2x \quad + 2z = 3 \\ \textcircled{\text{III}} \quad 3x + y - 2z = 0 \end{array}$$

Remember
to
communicate
clearly

$$\begin{array}{l} \textcircled{\text{II}} \quad -2x \quad + 2z = 3 \\ \textcircled{\text{III}} \quad 3x + y - 2z = 0 \end{array}$$

$$\begin{array}{l} \textcircled{\text{I}} \quad x + y + 4z = 5 \\ \textcircled{\text{III}} \quad 3x + y - 2z = 0 \end{array}$$

•

150

$$y = ax^2 + bx + c$$

$$(2, 3) \rightarrow$$

$$(-1, 6) \rightarrow$$

$$(0, 3) \rightarrow$$

[152] - propane \$3.59/gal
- has been increasing at 4% per year

a) 10 years ago $y = ab^x$
 $y = 3.59(1.04)^{-10}$

b) $10 = 3.59(1.04)^t$
when will it cost \$10?

[156a] $3|2x-5| - 8 = 5$

$$\boxed{156b} \quad \sqrt{3x^2 + 11x} = 2$$

$$\boxed{158} \quad f(x) = \sqrt{x+3}$$

a) domain: $-3 \leq x < \infty$
range: $0 \leq y < \infty$

b) If $g(x) = x - 10$ what is $f(g(x))$?

c) Domain and range of $f(g(x))$?

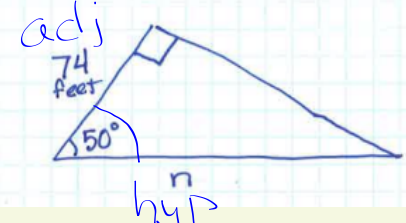
$$f(x) = \sqrt{x+3} \quad g(x) = x-10$$

① Is $f(g(x))$ equal to $g(f(x))$
 $\sqrt{x-7}$

Two Goals Today :

- ① Review Soh Cah Toa and $30^\circ-60^\circ-90^\circ$ and $45^\circ-45^\circ-90^\circ$ shortcuts
- ② Get an Overview of Periodic Functions

① Use Soh-Cah-Toa to solve for n

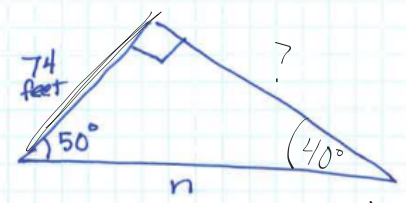


$$\cos(50^\circ) = \frac{74}{n}$$

$$n = \frac{74}{\cos(50^\circ)}$$

115.1

② Use the Law of Sines to solve for n



$$\frac{\sin(40^\circ)}{74} = \frac{\sin(90^\circ)}{n}$$

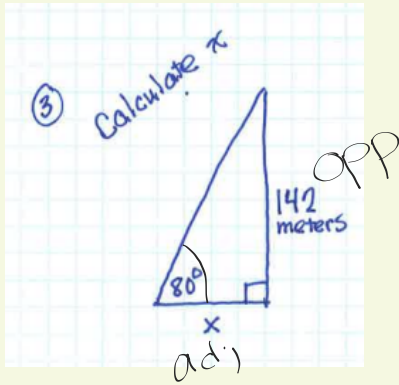
$$n \cdot \sin(40^\circ) = 74 \cdot \sin(90^\circ)$$

$$n = \frac{74 \cdot \sin(90^\circ)}{\sin(40^\circ)}$$

$$= 115.1$$

Law of Sines $\frac{\sin A}{a} = \frac{\sin B}{b}$ where a is the side length opposite angle A , etc.

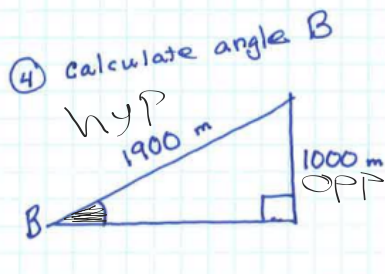
Law of Cosines $c^2 = a^2 + b^2 - 2ab \cdot \cos C$ where c is the side length opposite angle C



$$\tan(80^\circ) = \frac{142}{x}$$

$$\frac{x}{1} = \frac{142}{\tan(80^\circ)}$$

$$x = 25.04$$



$$\sin(B) = \frac{1000}{1900}$$

$$B = \sin^{-1}\left(\frac{1000}{1900}\right)$$

$$= 31.8^\circ$$

Soh Cah Toa
||

from
Geometry

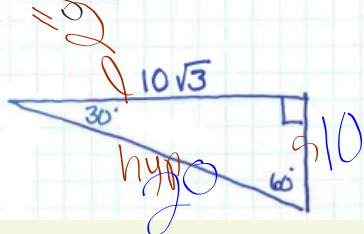
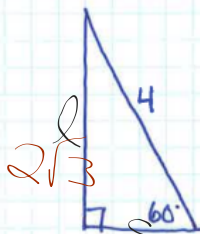
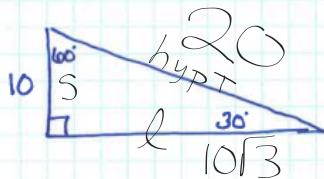
45°-45°-90° Triangle shortcuts

- ✓ The hypotenuse length is $\sqrt{2}$ times the length of the leg. (both legs are equal)

30°-60°-90° Triangle shortcuts

- ✓ The hypotenuse is twice the length of the shortest leg.
- ✓ The longest leg is $\sqrt{3}$ times the length of the shortest leg.

⑤ Find all missing sides



$$\frac{8}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{2}}{\sqrt{2}} = 4\sqrt{2}$$

$$\frac{6\sqrt{2}}{\sqrt{2}}$$

today

A brief introduction to Ch. 7

**What do earthquakes, cell phones,
and **music** have in common?**

**Their behavior is
cyclic, periodic, or circular.**

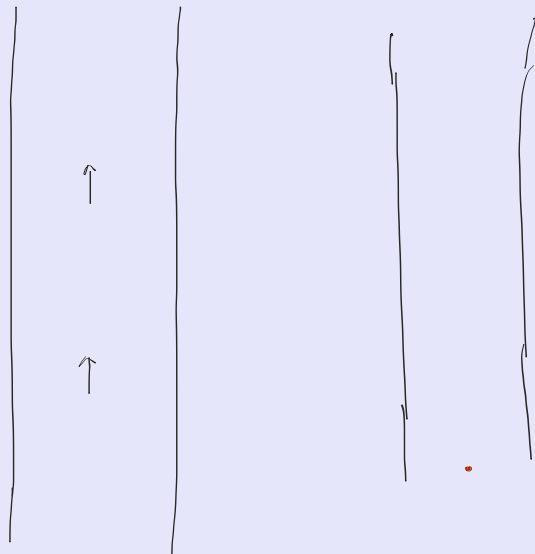
**Therefore, they can be analyzed, modeled, and/or
controlled with knowledge of.....**

Cyclic Functions

Periodic Functions

Trig Functions

Hallway
in a
hospital



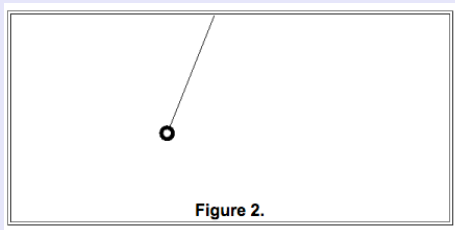


Figure 2.

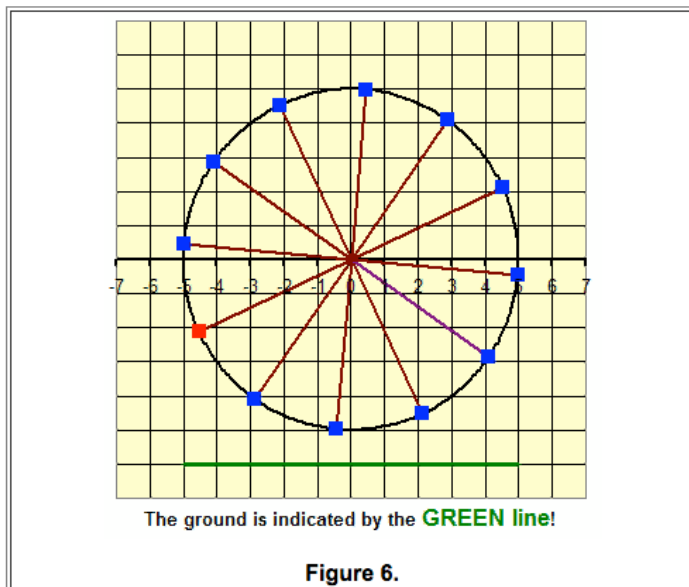
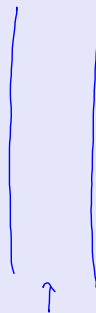
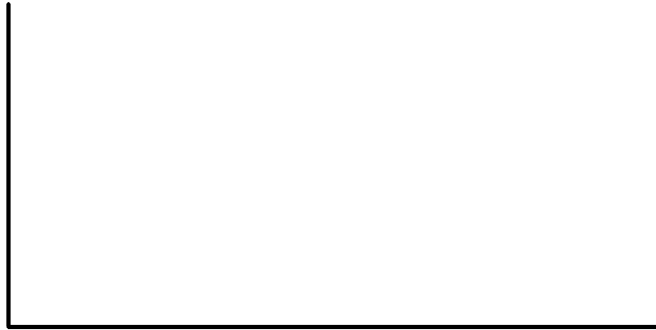


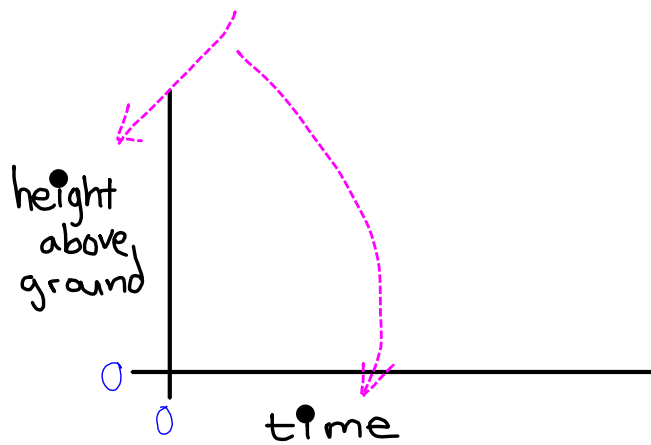
Figure 6.

The Ferris Wheel Graph

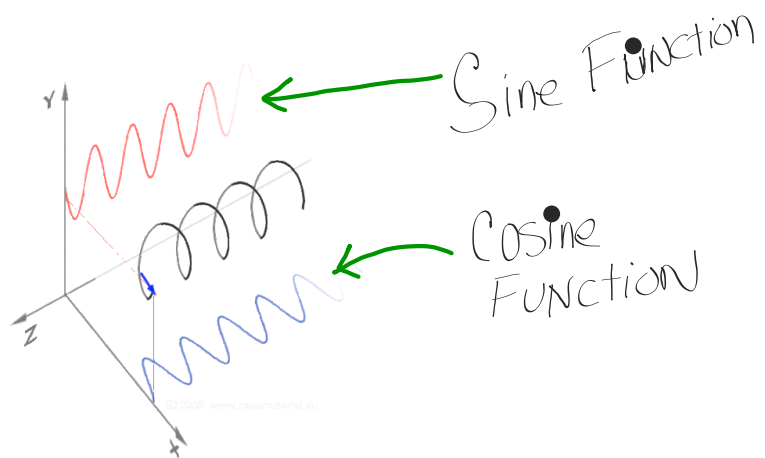
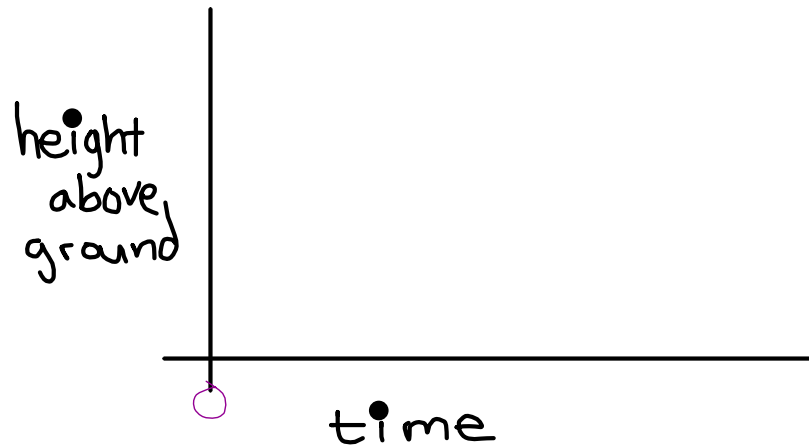
draw an x-y axis



add axes identifiers



Now predict the graph



<http://www.businessinsider.com/7-gifs-trigonometry-sine-cosine-2013-5>

Sound waves

Pressure Waves

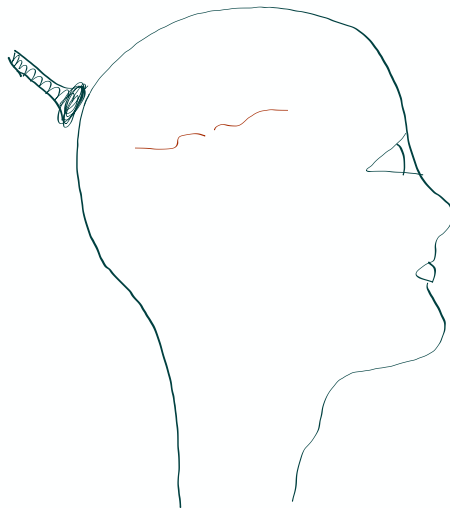
Ocean Waves

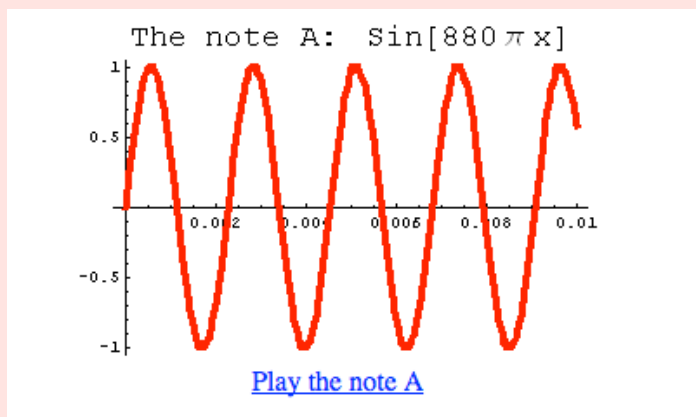
Microwaves

Electromagnetic Waves

Radio Waves

Earthquake Energy Waves





<http://www.math.umn.edu/~rogness/math1155/soundwaves/>

**On Tuesday we will collect
"periodic" data to analyze.**



Before the Ch. 6
TEST Monday

Turn in Ch 6 Assignments

(11 assignments)

**The After Test Assignment
given after Monday's test (due Tuesday)**

- **7.....4-6, 9-11**

$$5 \cdot 18^{6x} = 26$$

$$18^{6x} = \frac{26}{5}$$

$$18^{6x} = \frac{26}{5}$$

$$\log(18^{6x}) = \log\left(\frac{26}{5}\right)$$

$$6x \cdot \log(18) = \log\left(\frac{26}{5}\right)$$

$$6x = \log_{18}\left(\frac{26}{5}\right)$$

$$6x = \frac{\log\left(\frac{26}{5}\right)}{\log(18)}$$

$$x = \frac{\log\left(\frac{26}{5}\right)}{6 \log(18)}$$

Today's Brain Break
is inspired from
David Copperfield
(the Magician)

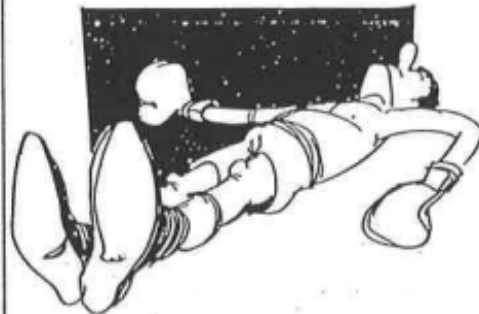


David Copperfield's Orient Express

The following 9 cards represent nine cars on the Orient Express. You may start in the Shower, Diner, Club, or Mail cars. You may move one step up, down, left, or right. You may not move diagonally.

Game	Shower	Baggage
Diner	Engine	Club
Caboose	Mail	Staff

EPNOETXN



math term ?