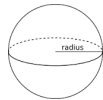If you missed unit 6 test, make up by Friday

Jan 31-10:12 PM

ACT review questions...

Save these for after notes

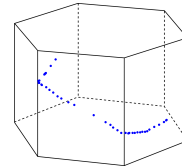Jan 31-10:16 PM

Calendar Math:

Sphere

Any cross section on a sphere is a circle

1. Horizontal slice: Circle

2. Vertical slice: circle

3. Diagonal slice: circle

Jan 31-10:12 PM

Hexagonal Prism:

1. Horizontal slice: Hexagon

2. Vertical slice: rectangle

3. Diagonal slice through all lateral faces: hexagon

4. Can you make an octagon by slicing the shape? no- max is 6
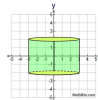
Feb 1-7:34 AM

Rotating of 2D Objects

Rotating a 2D figure around an axis creates a 3D figure

Start with a rectangle that has a side on each axis: it touches x-axis and y-axis

Feb 1-7:37 AM
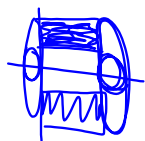
Rotating around the y-axis creates:

Right Cylinder

Rotating around the x-axis creates:

Right Cylinder

Feb 1-7:39 AM

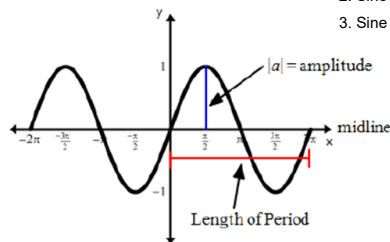Rotating a rectangle that has only ne
side on an axis creates:

Right cylinder
with a hole

Feb 1-7:42 AM
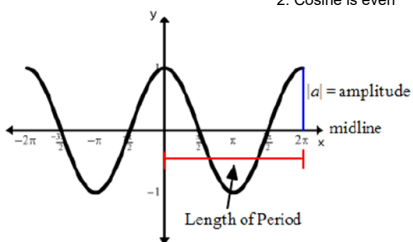

7.1 Graphs of Sine and Cosine

$f(x)=a\sin(bx)+k$

1. Sine goes through (0,0)
2. Sine goes up on the right
3. Sine is odd

$|a|$ = amplitude

midline

Length of Period

Jan 31-9:13 PM

$f(x)=a\cos(bx)+k$

1. Cosine starts high at 1
2. Cosine is even

$|a|$ = amplitude

midline

Length of Period

Jan 31-9:19 PM

Amplitude: The height of the wave

$f(x)=a\sin(bx)+k$

(half the distance from the max to min)

amplitude is never negative

Examples:

a) $f(x)=3\cos(2x)+5$

$a=3$

b) $f(x)=-2\sin(4x)-2$

$a=2$

c) $f(x)=1\sin(3\pi)$
       $\overline{2}$

$a=\frac{1}{2}$

Jan 31-9:21 PM

Period: One cycle of the wave

(how long before it repeats)

Period of parent $\sin x$; $\cos x$ 2π

To find the period in a function: $\frac{2\pi}{|b|}$

b is next to x

Examples:

a) $f(x)=-3\sin(3x)-4$

$b=3$ 2π

Period: $\frac{2\pi}{3}$

horizontal
shrink

b) $f(x)=2\cos(\frac{1\pi}{3}x)$

$b=\frac{1\pi}{3}$ $\frac{2\pi}{\frac{1\pi}{3}}$

h. Shrink

$\frac{2\pi}{1} \cdot \frac{1\pi}{3}$

$\frac{2\pi}{1} \cdot \frac{3}{1\pi}$ $\frac{6\pi}{\pi}$ 6

Jan 31-9:25 PM

If $|b|>1$ then it is a horizontal shrink
   a horizontal shrink=period smaller

If $|b|<1$ then it is a horizontal stretch
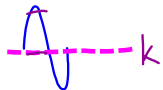   a horizontal stretch=period longer

Jan 31-9:28 PM

Midline: The horizontal line that cuts the function in half vertically.
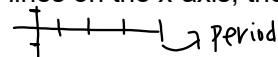
The midline is the vertical shift k

The distance from the midline to the max is the amplitude

The distance from the midline to the min is the amplitude

Jan 31-9:35 PM

Steps to graph:

1. Identify amplitude, period, midline

2. Mark 4 lines on the x-axis, the last one is the period.

3. Mark amplitude from the midline up and down

4. Determine if the graph is sin or cos

Jan 31-9:39 PM

3

Recall:

sin 0= $\bigcirc$ cos 0 = 1

$\sin\frac{\pi}{2}$ = 1 $\cos\frac{\pi}{2}$ = 0

sin π = 0 cos π = -1

$\sin\frac{3\pi}{2}$ = -1 $\cos\frac{3\pi}{2}$ = 0

$\sin 2\pi$ = 0 $\cos 2\pi$ = 1

Then it repeats   Then it repeats

Jan 31-10:07 PM

$f(x) = \sin x$
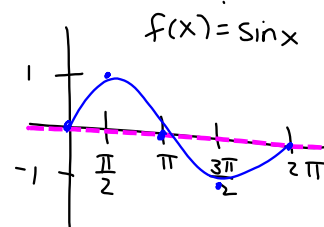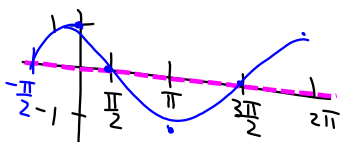
Feb 1-10:06 AM

$f(x) = \cos x$

Feb 1-10:09 AM

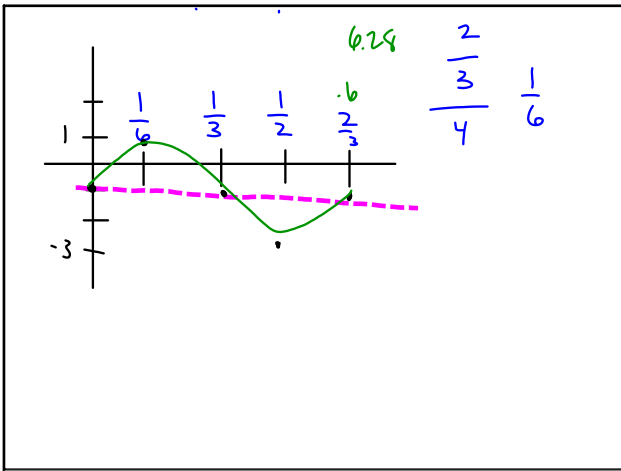Identify the amplitude, period, and midline and then sketch one period of the graph

f(x) =2sin(3πx) - 1

amplitude: 2

period: $b = 3\pi$ $\frac{2\pi}{3\pi}$ $\frac{2}{3}$

midline: $^-1$

Jan 31-9:41 PM

6.24 $\frac{2}{3}$ $\frac{1}{6}$

$\frac{1}{6}$ $\frac{1}{3}$ $\frac{1}{2}$ $\frac{2}{3}$

$\frac{3}{4}$ $\frac{1}{6}$

1

-3

Jan 31-9:44 PM

Example 2: f(x)=-5cos($\frac{1}{2}$x)+3

amplitude: 5

period: $\frac{2\pi}{\frac{1}{2}}$ $2\pi \cdot \frac{2}{1}$ 4π

midline:

3

Jan 31-9:45 PM

8

$-\pi$ π 2π 3π 4π

-2
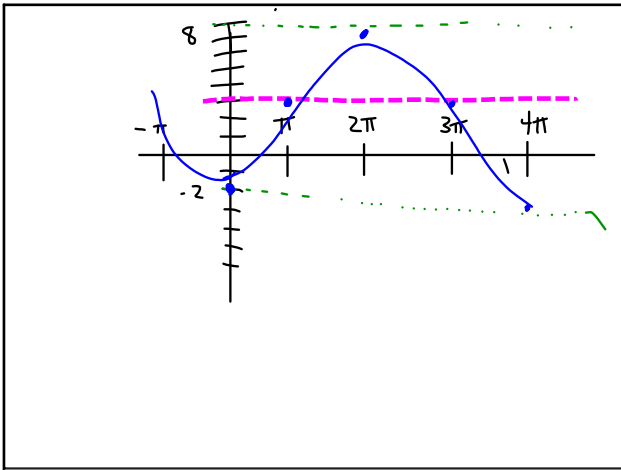
Feb 1-10:21 AM

Example 3:
Identify the amplitude, period, and midline
Then write the equation for the function.

sine or cosine

amplitude (a) 3

period (b) stretch or shrink
b=1 2π

midline (k)
2

Jan 31-9:47 PM

$f(x)=a\sin(bx)+k$

$f(x)=-3\sin x+2$

Feb 1-9:36 AM

sine or cosine   Cos

amplitude (a) 1

period (b) stretch or shrink
b=2 π

midline (k)
-4
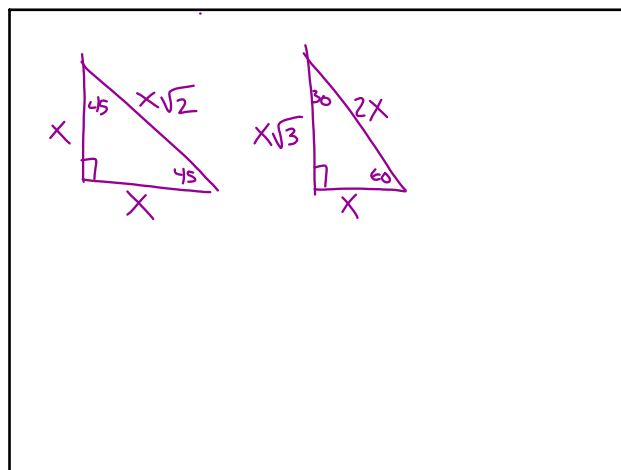
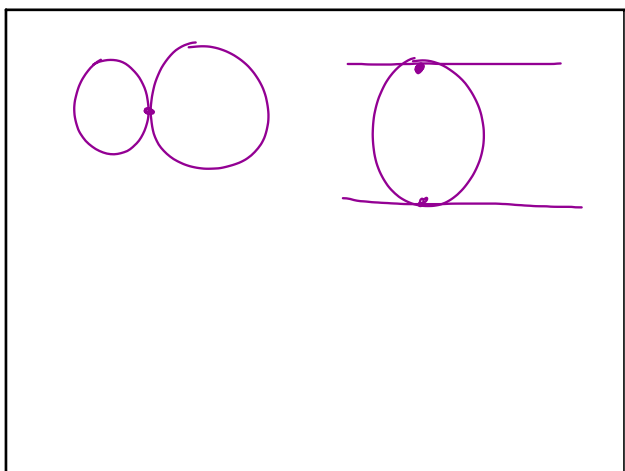$\frac{2\pi}{b} = \pi$

Jan 31-9:51 PM

$$f(x) = a\cos(bx) + k$$
$$\boxed{f(x) = \cos(2x) - 4}$$

Feb 1-10:31 AM

Feb 1-10:32 AM

Feb 1-10:33 AM

⑤ 0, 1, ②, ③, 4, ⑤, 6, ⑦, 8, 9

$$\underset{\text{hundreds}}{3} \cdot \underset{\text{tens}}{8} \cdot \underset{\text{units}}{4} \quad \boxed{96}$$

Feb 1-10:46 AM

① $h\left(1 - \dfrac{q}{100}\right)$

Feb 1-10:50 AM

② [c c c c c / m m m m] $\dfrac{6}{10} \cdot \dfrac{5}{9}$

$\dfrac{30}{90}$ $\boxed{\dfrac{1}{3}}$

Feb 1-10:51 AM

⑥ $\underline{5} \cdot \underline{4} \cdot \underline{3}$

   $\boxed{60}$

Feb 1-10:53 AM