

# Function Notation

1

2

3

4

5

6

7

What do each of the following mean?

1.  $[3,6]$
2.  $[3,6)$
3.  $(3,6]$
4.  $(3,6)$
5.  $(x_1, x_2]$



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What does it mean if you see...

1. Evaluate  $g(3)$
2. Evaluate  $h(x+2)$



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What do each of the symbols below mean?

1.  $<$

2.  $>$

3.  $\Delta x$

4.  $\Delta y$





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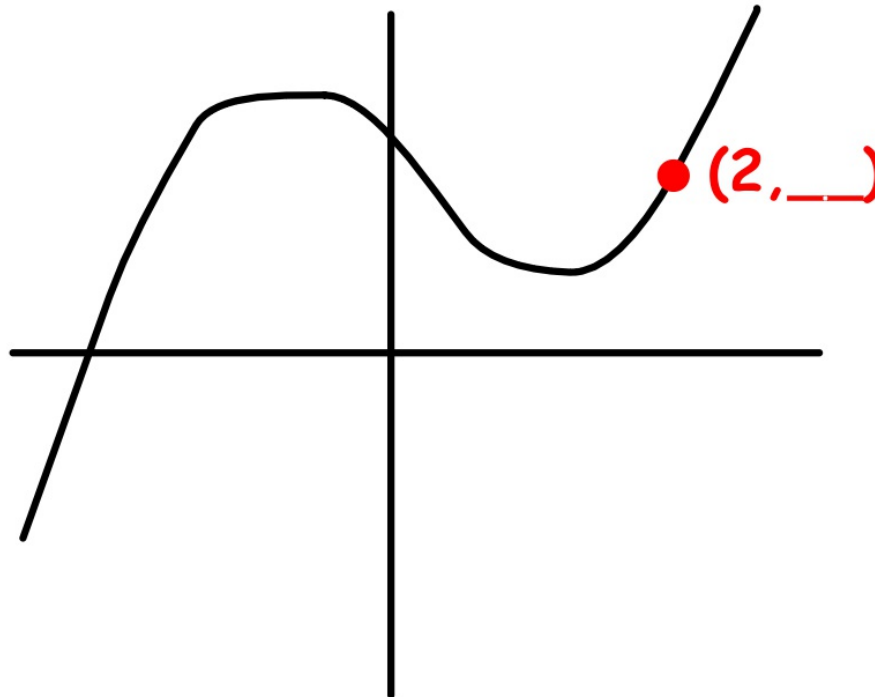
# Function Notation

What is a variable?????



# Function Notation

Fill in the blank for function  $f$ ...



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What is the statement saying about the graph of function  $f$ ?

On the interval  $[a, b]$ , any two numbers  $x_1$  and  $x_2$  in the interval where  $x_1 < x_2$  implies  $f(x_1) < f(x_2)$



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What is the statement saying about function  $f$ ?

In the interval  $(a,b)$  there exists a value  $c$  such that  $f(c) > f(x)$  for all other values  $x$  in  $(a,b)$



**What is Calculus?????**



**What is Calculus?????**



**Calculus is the mathematics of change!**

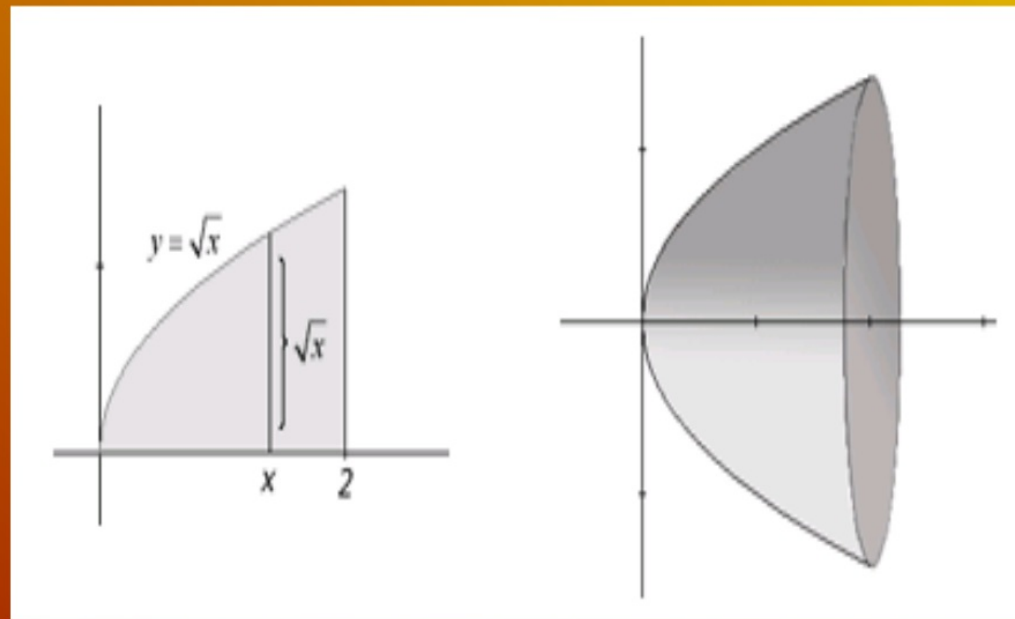
## What is Calculus?????

Without calculus we wouldn't be able to find instantaneous accelerations and velocities when those two things are not constant. These methods are used in engineering fields, auto industries, NASA, etc.



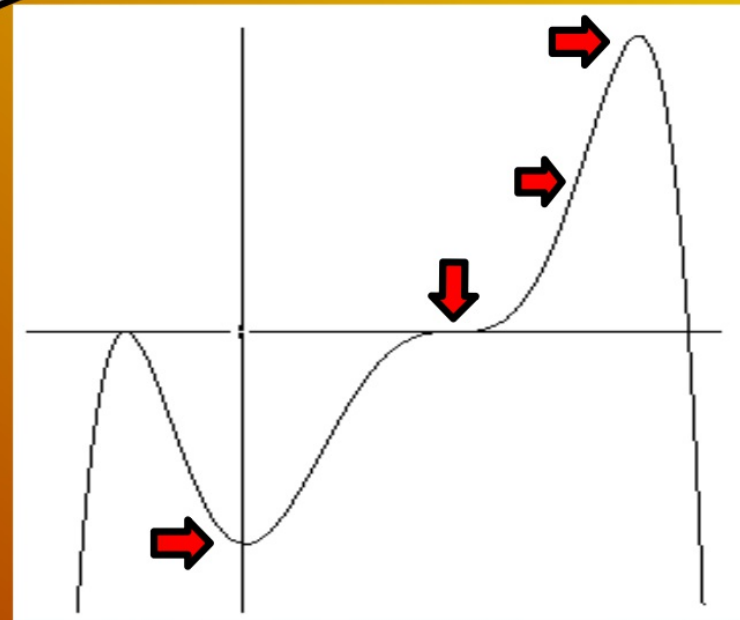
# What is Calculus?????

It also lets us calculate the area and volume of odd shapes.



# What is Calculus????

Calculus can also help to identify points of relevance of functions. This is helpful for things like maximizing and minimizing.

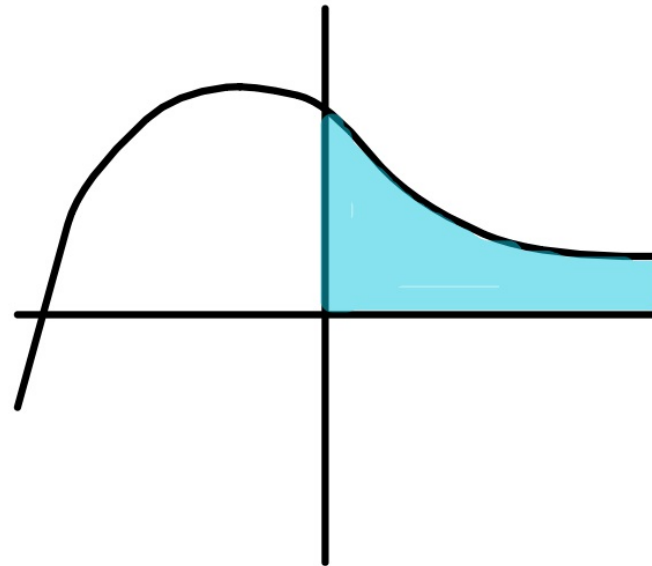
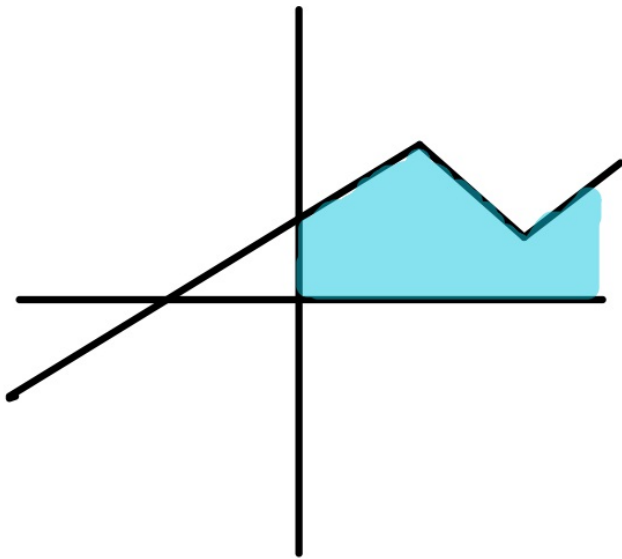


## Is it Calculus (changing) or Precalculus (constant)

1. A car's velocity is modeled by  $v(t) = 2\sin t$ , find the distance traveled in 8 seconds.
2. An object is traveling at a rate of 10 ft/sec, how far did it travel in 20 seconds?

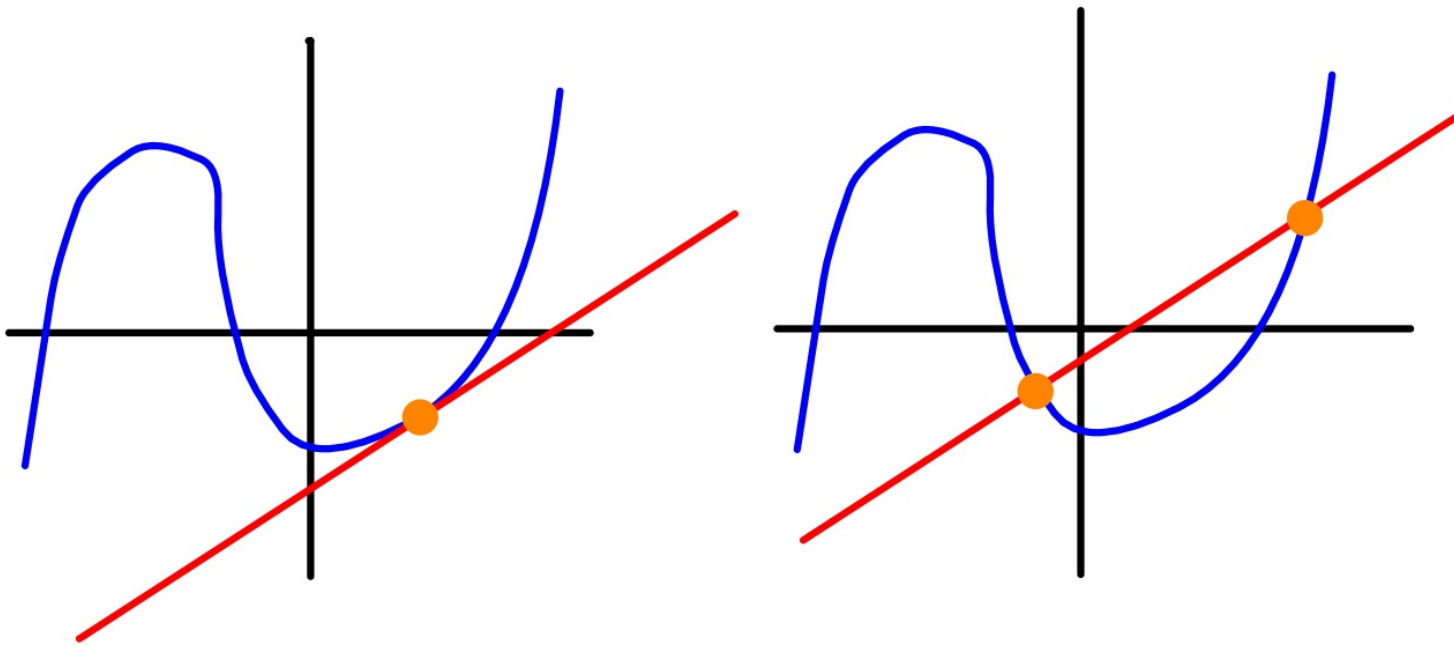
# Is it Calculus (changing) or Precalculus (constant)

**Find the area under the curve**



# Is it Calculus (changing) or Precalculus (constant)

Find the slope of the orange line



# The Two Main Problems in Calculus

**Tangent line Problem**

**Area Problem**



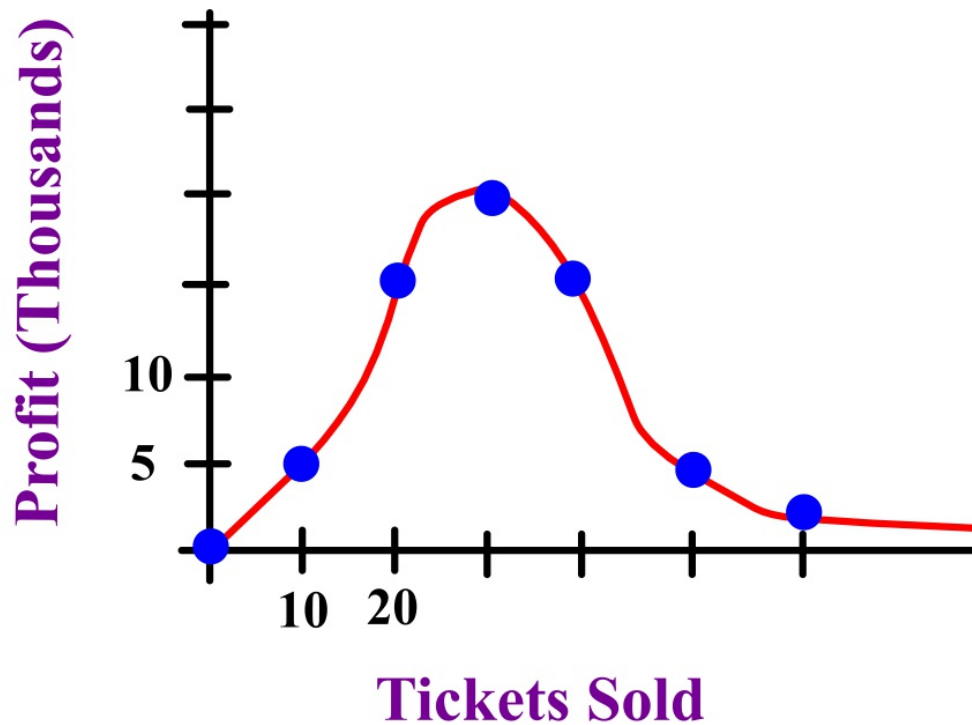
**1. A car's velocity is modeled by  $v(t) = 20 + \sin t$ , find the distance traveled in 8 seconds.**



**An object is traveling at a rate of 10 ft/sec, how far did it travel in 20 seconds?**



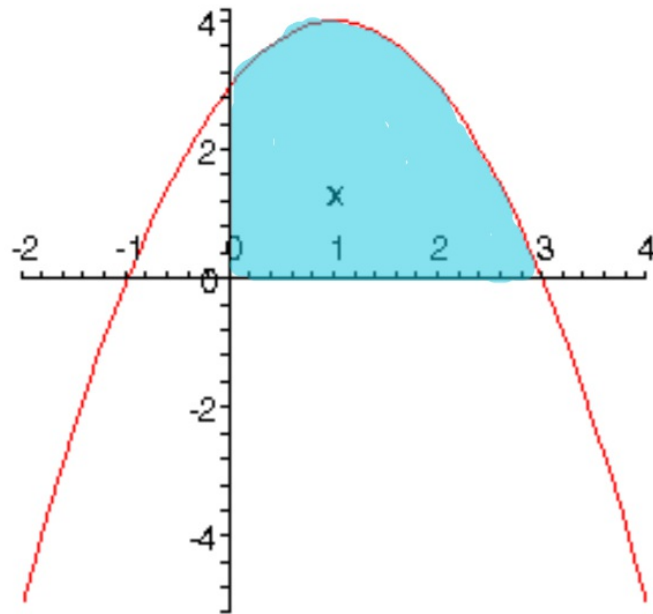
The profit of a band is shown below in relation to the number of tickets sold...



What is the rate of change of profit when 50 tickets are sold?



# Find the Shaded Area



**Homework:**

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