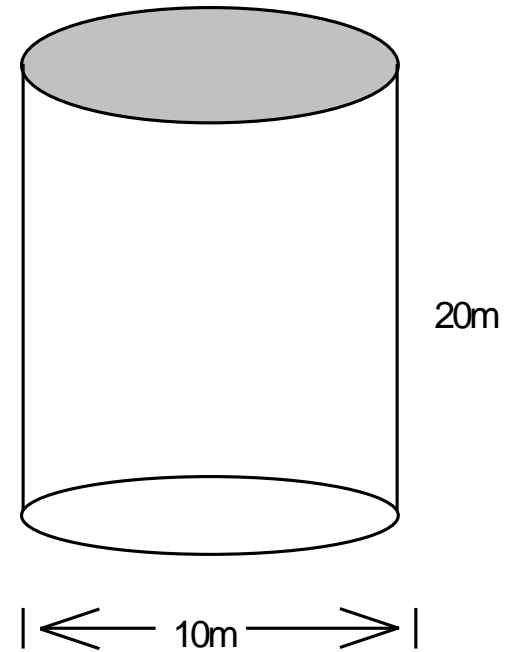Sketch y=2x from (0,0) to (2,4), the x axis, and the line x=2. Determine the area of the enclosed region.

2. Sketch $y = x^2$ from (0,0) to (2,4), the x axes, and the line x=2. Determine the area of the enclosed region.

A cylindrical tank has diameter 10 meters and height 20 meters. Water is being poured into the tank at the rate of $20\,m^3 / \min$

Determine the rate at which the water is rising.

20m

$|\!\!\longleftarrow\!\!$ 10m $\!\!\longrightarrow\!|$

Redo problem 3, only this time with a conical tank

diameter 10 meters and height 20 meters. Water is being poured into the tank at the rate of 20 $m^3 / \min$
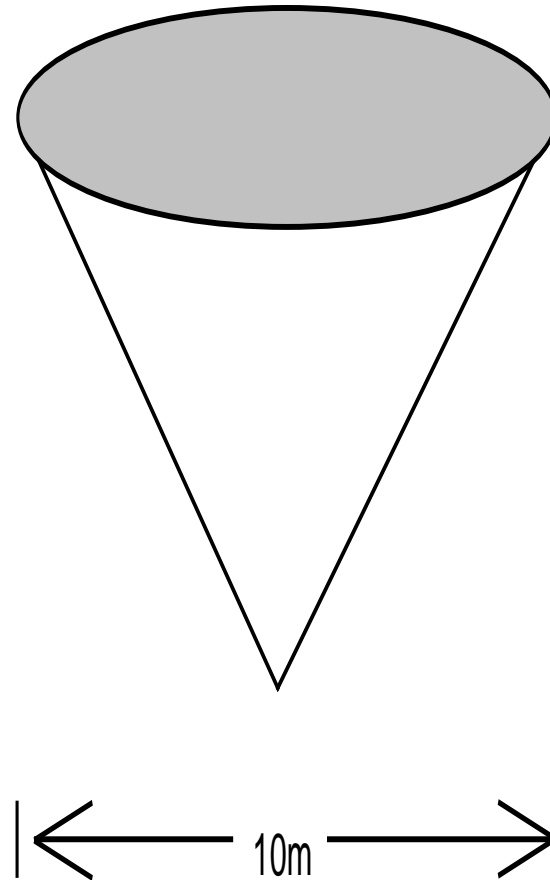
A piece of string 100 cm. long is to be divided into two parts. One of the parts will be used to form a circle, and the other to form a square. Where should the cut be made so that the total area is as large as possible? Where should it be made so that the total area will be as small as possible?
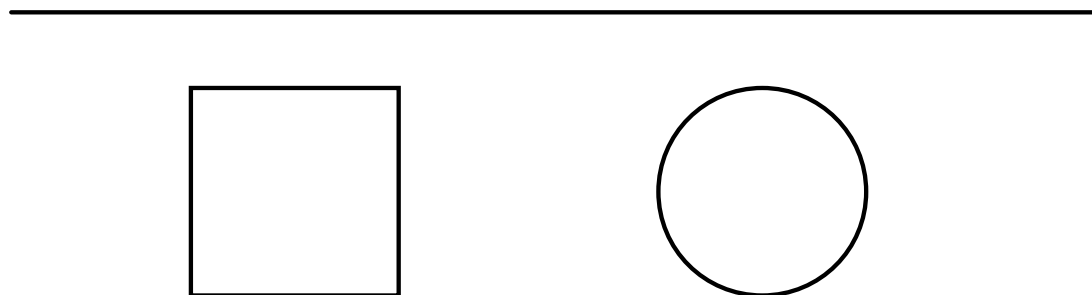
a. What happens to $1+\dfrac{1}{x}$ as x gets large?

b. What happens to $\left(1+\dfrac{1}{100}\right)^{y}$ as y gets large?

c. What happens to $\left(1+\dfrac{1}{x}\right)^{y}$ as x gets large?

What happens to $\left(1+\dfrac{1}{x}\right)^{y}$ as y gets large?

What happens to $\left(1+\dfrac{1}{x}\right)^{x}$ as x gets large?

$$f(x) = \ln(x)$$

Let A be the point on f(x) with x-coordinate 1 and let B be the point on f(x) with x-coordinate 1+h, where h is a constant other than zero.

Sketch the graph of f(x) and sketch $\overrightarrow{AB}$ when $h = \dfrac{1}{2}$

Write an equation of $\overrightarrow{AB}$ in terms of h

Sketch the graph of f(x) and sketch $\overrightarrow{AB}$ when $h = \dfrac{1}{1,000,000}$

Sketch the graph, if possible, of a function of x, defined for all x on the interval $[-3, 5]$, that has a relative maximum but no absolute maximum.

Sketch the graph, if possible, of a continuous function of x, on the interval $[-3, 5]$, that is always concave down, is decreasing on $[-3, 0]$, and is increasing on $[0, 5]$

Sketch the graph, if possible, of a function of x, defined for all x on the interval $[-5,5]$, that is even and has period 2

Sketch the graph, if possible, of a function of x, defined for all x on the interval $[-5,5]$, that is odd and does not pass through the origin

Sketch the graph of $f(x) = x + 2 + \dfrac{1}{10^{20} \cdot x}$

Discuss the graph

Determine the domain and range of f and g

$$f(x) = \sqrt{\dfrac{x+3}{x^2-9}}$$

$$g(x) = \sqrt{9-x^2}$$

$$f(x) = |2x - 3|$$

$$g(x) = f'(x)$$

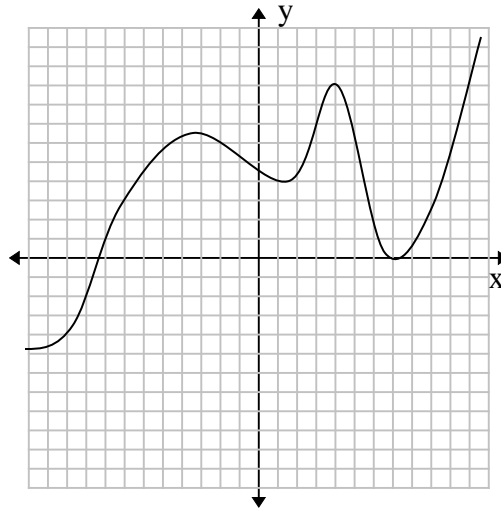Find the domain and range of f and g

Zoom to determine the slope of

$$f(x) = \cos(x) \text{ at } x = \frac{\pi}{6}$$

Write an equation of the line that is tangent to

$$f(x) \text{ at } x = \frac{\pi}{6}$$

Graph both on your calculator

Given the graph of f', the derivative of , determine all interesting features of f . Sketch a possible graph of f