

Calculate $\sum_{n=1}^{\infty} 10(\frac{1}{2})^{n-1}$

20

$$S_{\infty} = \frac{u_1}{1-r}, \quad |r| < 1$$

Calculate $\sum_{n=1}^{\infty} 10(2)^{n-1}$

convergence

10, 20, 40, 80, 160

∞ divergence

$-\infty$

Sketch an equiangular triangle.

Sketch a square.

Sketch a regular pentagon.

Sketch a regular hexagon.

Sketch a regular heptagon.

Sketch a regular octagon.

Sketch a regular nonagon.

Sketch a regular decagon.

$n = \text{number of sides}$


 $n=3$

circle

Today's learning objective:

By the end of class, I will be able to calculate and read limits while determining divergence or convergence.

\mathbb{R} All real numbers

∞
 $-\infty$

lim

Today's language objective:

end
Limit: behavior of some function

Divergence

Convergence

$$\lim_{x \rightarrow \infty}$$

$$\left(\frac{1}{x} \right)$$

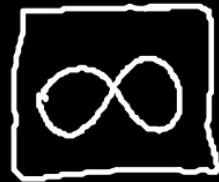
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rational

$$\lim_{x \rightarrow 0^+}$$

$$\left(\frac{1}{x} \right)$$



2nd graph

+ .00001



DIVERGENT

Challenge

Challenge



$$\lim_{x \rightarrow \infty}$$

$$\left(\frac{1}{x - 75} \right)$$



- .000003

$$\lim_{x \rightarrow 0^-}$$

$$\left(\frac{1}{x} \right)$$

$$\lim_{x \rightarrow \infty}$$

$$\frac{1}{x - 70000}$$



$$\lim_{x \rightarrow 4} (2x)$$

$$x \rightarrow 4$$

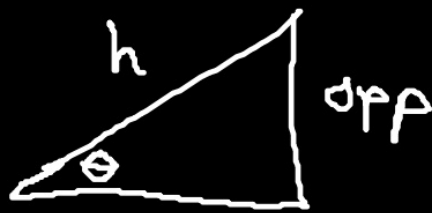
8

Challenge

SOH CAH TOA

$$\lim_{x \rightarrow 2\pi} (2 \sin 2x)$$

$$x \rightarrow 2\pi$$



$$\cos \theta = \frac{a}{h}$$

$$\cos \theta = a$$

0

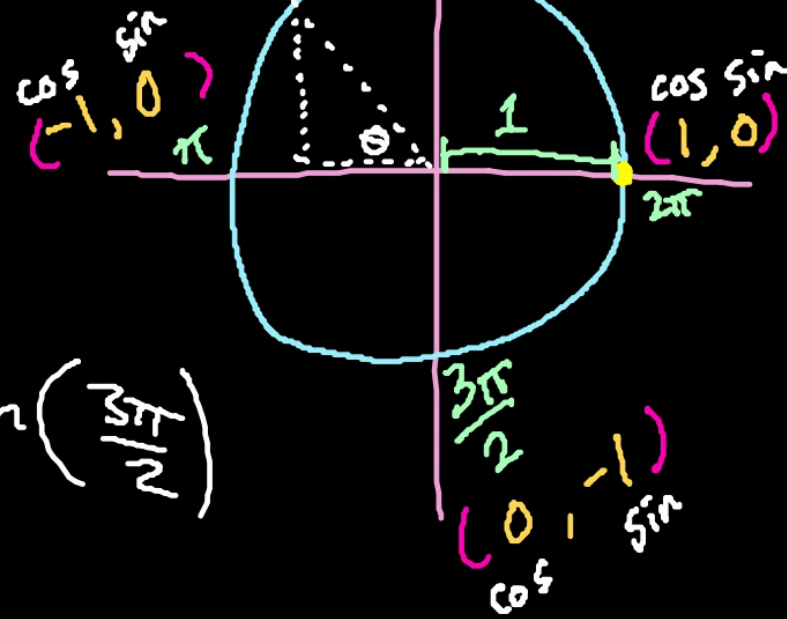
$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\sin\left(\frac{3\pi}{2}\right)$$

$$C = 2\pi r$$

$$C = 2\pi$$

Unit Circle
degrees
(radians)



$$\lim_{x \rightarrow \infty} \left(\frac{2x - 3}{x + 1} \right)$$

2

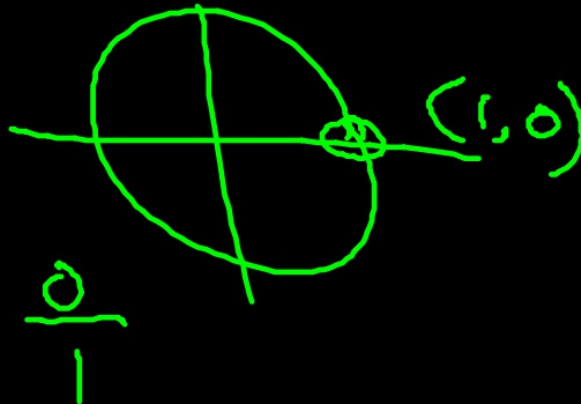
$$\frac{2\infty}{\infty}$$

Challenge

$$\lim_{x \rightarrow 2\pi} (4 \tan x)$$

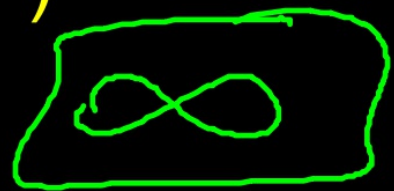
$$x \rightarrow 2\pi$$

0



$$\lim_{x \rightarrow \infty} (2x^2)$$

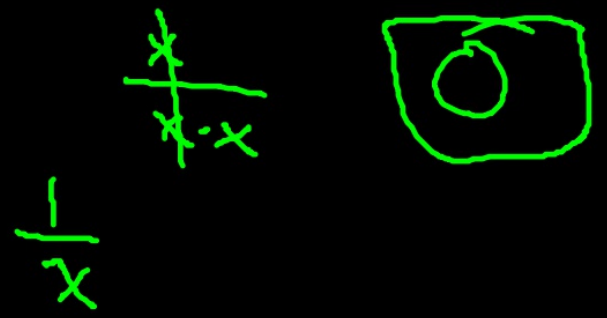
$$x \rightarrow \infty$$



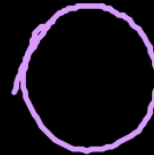
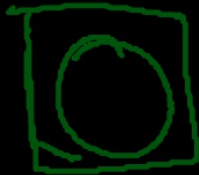
Challenge

$$\lim_{x \rightarrow \infty} \left(\frac{x + 16}{x^2 - 75} \right)$$

$$x \rightarrow \infty$$



$$\lim_{x \rightarrow \infty} \frac{2 \cos(2x) - 3}{x}$$

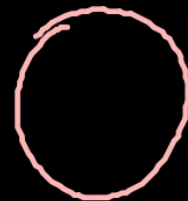


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Challenge

$$\lim_{x \rightarrow 0^+} \frac{1}{2x^2}$$

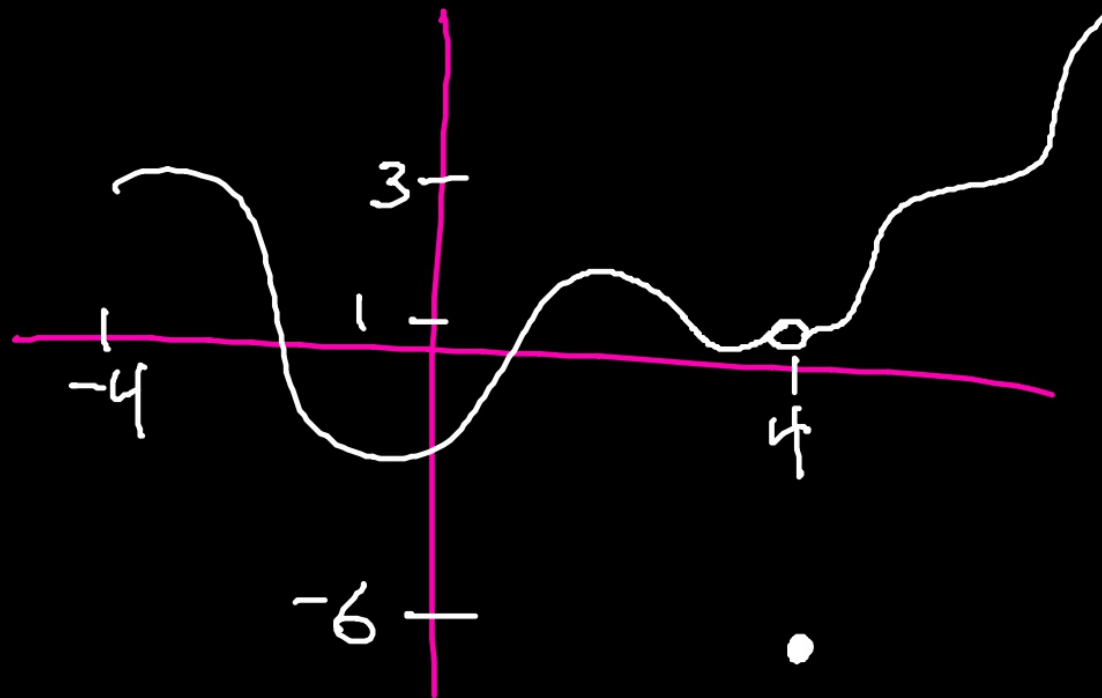


$$\lim_{x \rightarrow \infty} \frac{-4x}{\cos^2 x + 11}$$

Challenge

$$\lim_{x \rightarrow 0^-} \frac{1}{2x^2}$$

$$\lim_{x \rightarrow 4}$$



Challenge

$$\lim_{x \rightarrow \infty} (3x^3 - 400x^2)$$

