Derivatives of sine and cosine

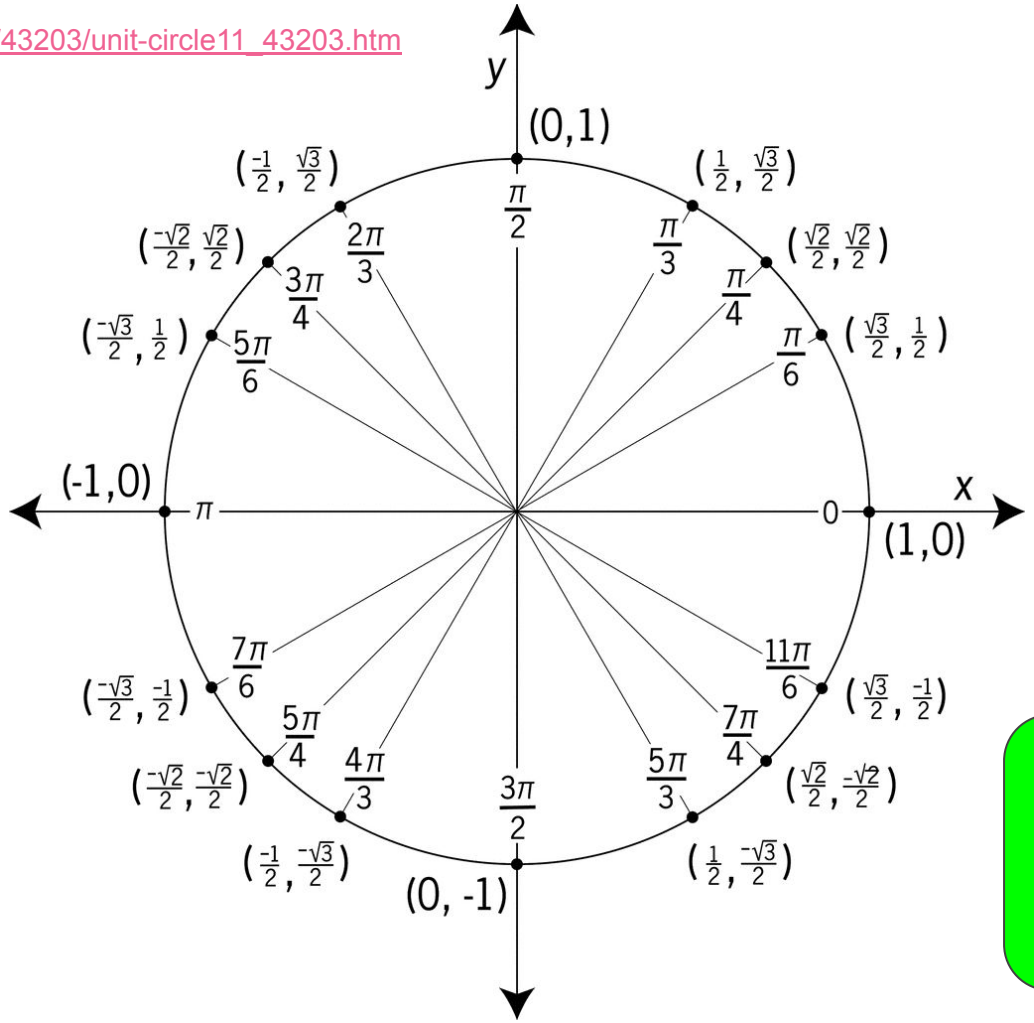
MTH 201 -- Module 4B

Without using a calculator -- what is the value (not the derivative) of $\sin(\pi/2)$?

- 0
- $1/2$
- $\sqrt{3}/2$
- 1
- Undefined
- None of the above

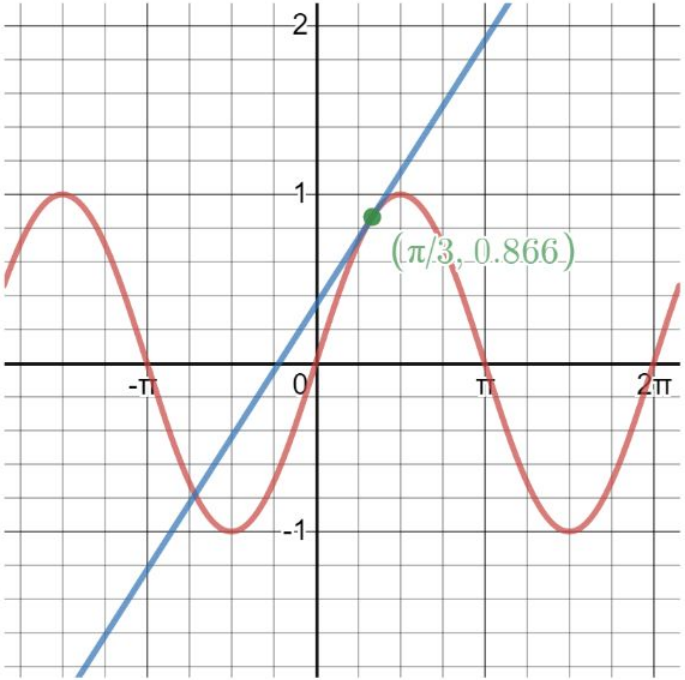
To 0

https://etc.usf.edu/clipart/43200/43203/unit-circle11_43203.htm



Be able to state the values of sine and cosine for all 16 special angle values shown on the unit circle.

Here's the graph of the function $y = \sin(x)$ and its tangent line at $x = \pi/3$. The slope of this line is exactly



- $1/2$
- $\pi/3$
- $\pi/2$
- $\sqrt{3}/2$
- 1
- The exact value cannot be determined with only this information

To 0

The slope of the tangent line to $y = x + \sin(x)$ at $x = \pi/2$ is

- 1
- $1 + \pi/2$
- 2
- $1 + \cos(x)$
- None of the above

The *second* derivative of $y = x + \sin(x)$ is

- $-\sin(x)$
- $1 + \cos(x)$
- $1 - \sin(x)$
- $x + \sin(x)$
- None of the above

Practice -- Activity 2.2.4

Activity 2.2.4. Answer each of the following questions. Where a derivative is requested, be sure to label the derivative function with its name using proper notation.

a. Determine the derivative of $h(t) = 3\cos(t) - 4\sin(t)$.

b. Find the exact slope of the tangent line to $y = f(x) = 2x + \frac{\sin(x)}{2}$ at the point where $x = \frac{\pi}{6}$.

c. Find the equation of the tangent line to $y = g(x) = x^2 + 2\cos(x)$ at the point where $x = \frac{\pi}{2}$.

The derivative of h(t) = 3 cos(t) - 4 sin(t) is...

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The exact slope (no decimals!) of the tangent line to $y = f(x) = 2x + \frac{\sin(x)}{2}$ at $x = \pi/6$ is...

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The equation of the tangent line to $y = g(x) = x^2 + 2\cos(x)$ at $x = \pi/2$ is...

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