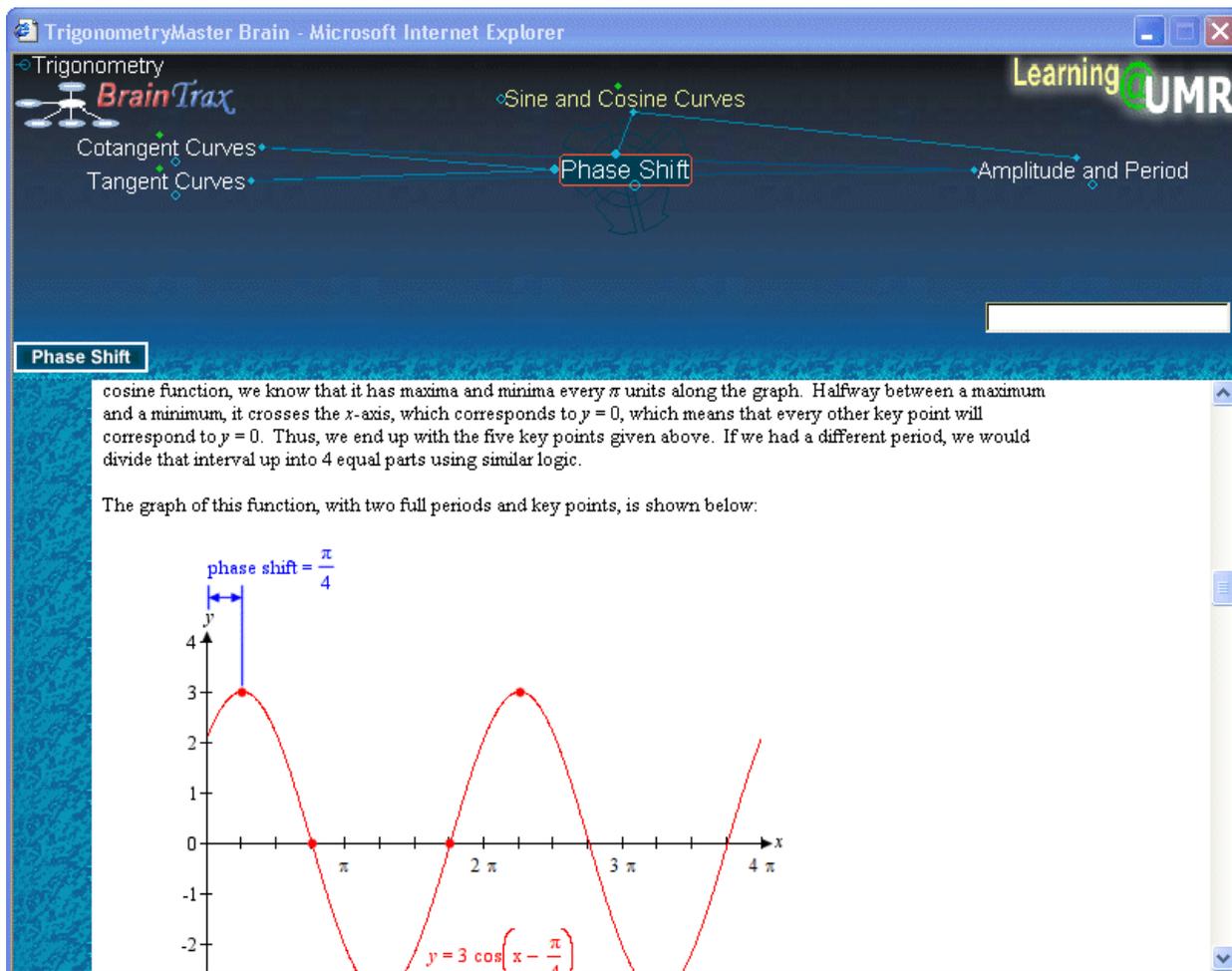


The Trigonometry Brain is similar to the Algebra Brain, but lacks many of the features found only in the Algebra Brain. Since Trigonometry is usually only taught at one instruction level, there is no real need for remediation. The Trigonometry Brain is primarily aimed at students who are taking trigonometry at the collegiate level. All of the topics in the Trigonometry Brain are covered in UMR's Trigonometry course.



TrigonometryMaster Brain - Microsoft Internet Explorer

Trigonometry

Sine and Cosine Curves

Phase Shift

Amplitude and Period

Cotangent Curves

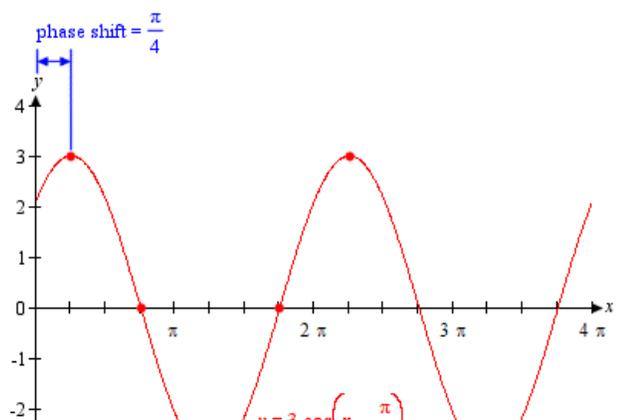
Tangent Curves

Learning@UMR

Phase Shift

cosine function, we know that it has maxima and minima every π units along the graph. Halfway between a maximum and a minimum, it crosses the x -axis, which corresponds to $y = 0$, which means that every other key point will correspond to $y = 0$. Thus, we end up with the five key points given above. If we had a different period, we would divide that interval up into 4 equal parts using similar logic.

The graph of this function, with two full periods and key points, is shown below:



phase shift = $\frac{\pi}{4}$

$y = 3 \cos\left(x - \frac{\pi}{4}\right)$

As with all our Brains, the Trigonometry Brain is composed of two primary features: The Brain navigation window and the content window. The active thought is located in the center of the Brain 'plex'. Clicking on any other thought will activate and move it to the center of the Brain 'plex'. Then the bottom window will load a different content page associated with the activated thought.

For instance, following the path *Trigonometric Functions* \Rightarrow *Six Basic Trig Functions* \Rightarrow *Graphs of Trig Functions* \Rightarrow *Sine and Cosine Curves* \Rightarrow *Phase Shift* will take you to a page about the phase shift of a trigonometric function, an important concept in Trigonometry

There are over 100 thoughts contained in the Trigonometry Brain. Unlike the first incarnation of the Trigonometry Brain, much more detail is included on each important trigonometric concept. All examples have detailed explanations. Many more real world applications have been included.

Trigonometry relies on a thorough understanding of algebra for success. Therefore, we include a "Fundamentals of Trigonometry" thread that details some of the basic knowledge required to be successful in trigonometry, such as

functions, an understanding of real numbers (both rational and irrational), and a list of algebraic concepts that are useful to know in Trigonometry. This list includes reasons why each concept is important in trigonometry. For instance, being familiar with arithmetic combinations of functions will help us to solve trigonometric equations. Trigonometric equations can be solved using algebraic techniques; we only apply trigonometry when determining the exact solution after we have solved the trigonometric equation for the appropriate function.

For fun, we include a brief history of π , since π is a fundamental concept in trigonometry. We start with the origins of π as a ratio between circumference and diameter back in Ancient Greece and work our way forward through time to the computer era, where π has been calculated to over 200 billion digits (and still counting!).

Feel free to explore the Trigonometry Brain at your leisure. Like the Algebra and Calculus Brains, it is available 24 hours a day, 7 days a week.

Questions or comments about the Trigonometry Brain can be directed via email to braintrax@umr.edu.