

# The Game of CALCULUS JEOPARDY

*A different way to review A.P. Calculus*

Know Your Limits	Derivatives	What's My Area	In Motion	Definite Integral	Highs And Lows
100 (MC)	100 (MC)	100 (FR)	Calculator 100 (MC)	100 (MC)	100 (MC)
200 (MC)	200 (MC)	200 (FR)	200 (MC)	200 (FR)	200 (MC)
300 (MC)	300 (FR)	300 (MC)	300 (FR)	300 (MC)	300 (FR)
400 (FR)	Calculator 400 (MC)	400 (MC)	Calculator 400 (MC)	Calculator 400 (FR)	Calculator 400 (MC)
500 (FR)	500 (FR)	500 (MC)	500 (FR)	500 (MC)	500 (FR)

I don't know about you but I have found that there are never enough challenging practice questions for Advanced Placement Calculus. I find that a number of problems in typical review material are of a relatively easy or straightforward nature, like:

- Take the derivative of  $\frac{2x-1}{x^2+2}$  or
- Find  $\int (x^3 - \cos x) dx$
- Find the intervals where  $f(x) = x^3 - 3x + 1$  is increasing

While these problems test basic knowledge needed to do well in the A.P. exam, they are not the “clever” problems that permeate the actual exam – the ones that not only make the student think but make you think as well!

With that in mind, I have put together a large number of review problems that will challenge your best students while not frustrating your weaker ones. It is all packaged in a new game called **CALCULUS JEOPARDY**.

**CALCULUS JEOPARDY** is similar to the famed TV show with you playing the role of Alex Trebek. Like the show, there is a Jeopardy, Double Jeopardy, and Final Jeopardy game. Unlike the show, I have also included a Triple Jeopardy game as well as a Triple Jeopardy BC version.

The student version of Calculus Jeopardy (without solutions) is **free**.

Below are all the question categories that encompass the entire A.P. curriculum for the **CALCULUS JEOPARDY** game. Each category contains 5 “answers” in increasing difficulty. So there are 120 problems available to you (plus an AB and BC Final Jeopardy question). About 65% are multiple choice and 35% are free response. About 25% allow graphing calculators and 75% do not.

Jeopardy (\$100 - \$500)	Double Jeopardy (\$200 - \$1000)	Triple Jeopardy (\$300 - \$1500)	Triple Jeopardy (BC) (\$300 - \$1500)
Know Your Limits	Continuity/Differentiability	What's My Average	Parametrics
Derivatives	Related Rates	Derivative Applications	Integration Techniques
Area	Function Analysis	All Things Trig	Infinite Series
In Motion	Integration	Integral Applications	Polar Equations
Definitely Integrated	Volume	It's Approximate	Calculus Applications
Highs and Lows	Differential Equations	Odds and Ends	Taylor Polynomials

One way to play the game is as a class using a computer projector. The “answers” are in PDF format in large type that can be seen all over the classroom. You can choose to have 3 students in competition, teams of students in competition, or have each class member compete. These options are all outlined in the instructions.

Rather than using the game as a review, another way the game can be played is throughout the entire year. Many teachers give a warm-up question when the students first enter the room. Using the **CALCULUS JEOPARDY** game, you will now have 122 calculus on your computer. You can give questions in any order.

Included in the free download is an Excel “scorecard” that will keep track of how much money your students have amassed throughout the game or the year as well as the percent of questions they got correct. The competition is a neat way to motivate students and keep track of the areas in which they are strong or weak. Using the color coding (green for right, red for wrong gray for not attempted, you can also see the questions with which students have the most problems.

Name	Total \$\$	% Correct	Limits					Derivatives					Area					Motion					
			100	200	300	400	500	100	200	300	400	500	100	200	300	400	500	100	200	300	400	500	
Greer, Tim	900	45%	+	-	0	+	+	-	+	+	+	+	+	0	0	-	-	-	+	+	-	0	0
Schneider, Kurt	4,900	90%	+	+	+	+	+	+	+	0	+	+	+	+	+	+	-	+	+	+	+	+	+
Sherman, Brittany	-300	30%	+	+	0	0	0	+	-	-	0	0	0	0	+	0	-	0	+	+	-	0	0
Sun, James	2,100	65%	+	+	+	+	0	+	+	+	0	0	+	+	-	+	+	+	+	+	-	-	0
Tanzer, Matt	1,100	55%	+	+	+	+	0	+	+	+	-	-	+	+	0	0	+	0	0	0	0	+	-
Tsui, Sam	100	25%	+	0	0	0	0	+	-	-	0	0	+	+	0	0	0	+	0	0	0	0	0
Tyree, Ted	4,000	75%	+	+	-	0	0	+	+	+	+	+	+	+	0	+	+	+	0	0	+	+	+

**Calculus JEOPARDY** operates like the TV game. Each version has a game board with all the category and dollar amounts. When you click on a category and dollar amount, a window will open with the “answer.” You will allow students time to come up with the “question.” You will have the correct “questions” in front of you so you will know whether the student’s question is correct. Once you look at an answer, that answer is now grayed out on the game board to show that you have used that problem. You can use the included scorecard to keep track of the student dollar amounts to determine a leader and then a winner.

Included in the game are instructions and suggestions on how to play.

With the game, you receive the “answers”, questions, and solutions. A typical question is “What is B?” while solutions show how a problem is worked out and include graphs and calculator screens if needed.

Here is a typical answer, question, and solution:

## Derivatives - 400

■ (Calculator allowed) The derivative of the inverse function to  $y = x^3 - 3x - 1$  at  $x = 2$

- A) 0.097
- B) 0.111
- C) 0.201
- D) 1.000

Answer: What is A?

Solution:

## Derivatives - 400

■ (Calculator allowed) The derivative of the inverse function to  $y = x^3 - 3x - 1$  at  $x = 2$

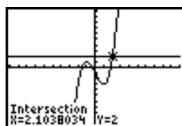
- A) 0.097
- B) 0.111
- C) 0.201
- D) 1.000

Inverse:  $x = y^3 - 3y - 1$

$$1 = 3y^2 \frac{dy}{dx} - 3 \frac{dy}{dx}$$

A.  $1 = \frac{dy}{dx}(3y^2 - 3)$

$$\frac{dy}{dx} = \frac{1}{3y^2 - 3}$$
$$\frac{dy}{dx}_{(x=2.104)} = \frac{1}{3y^2 - 3} = 0.097$$



The student version just has the problem with its 4 choices if it is a multiple choice question. On the solution version, you just scroll down and the solution comes into view with the problem itself still appearing.

You may also be interested in playing **CALCULUS JEOPARDY** by giving the students the problems to take home and work on their own. For this you need the version of **CALCULUS JEOPARDY** in smaller type in typical test format. When you order the game, you will automatically receive this smaller type version *free of charge*.

There is only one version of **CALCULUS JEOPARDY**. In it, you get 91 AB questions and 31 BC questions. As in the actual A.P. exam, students taking BC Calculus also have to answer AB questions, so this game is appropriate for both levels.

**CALCULUS JEOPARDY** is challenging. It is not simple derivatives and integrals. It will test students whether they understand just about every nuance of the course.

If you are interested in purchasing **CALCULUS Jeopardy**, go to the JEOPARDY page on the [www.mastermathmentor.com](http://www.mastermathmentor.com) website.