

Achieve Question Score Calculator Guide

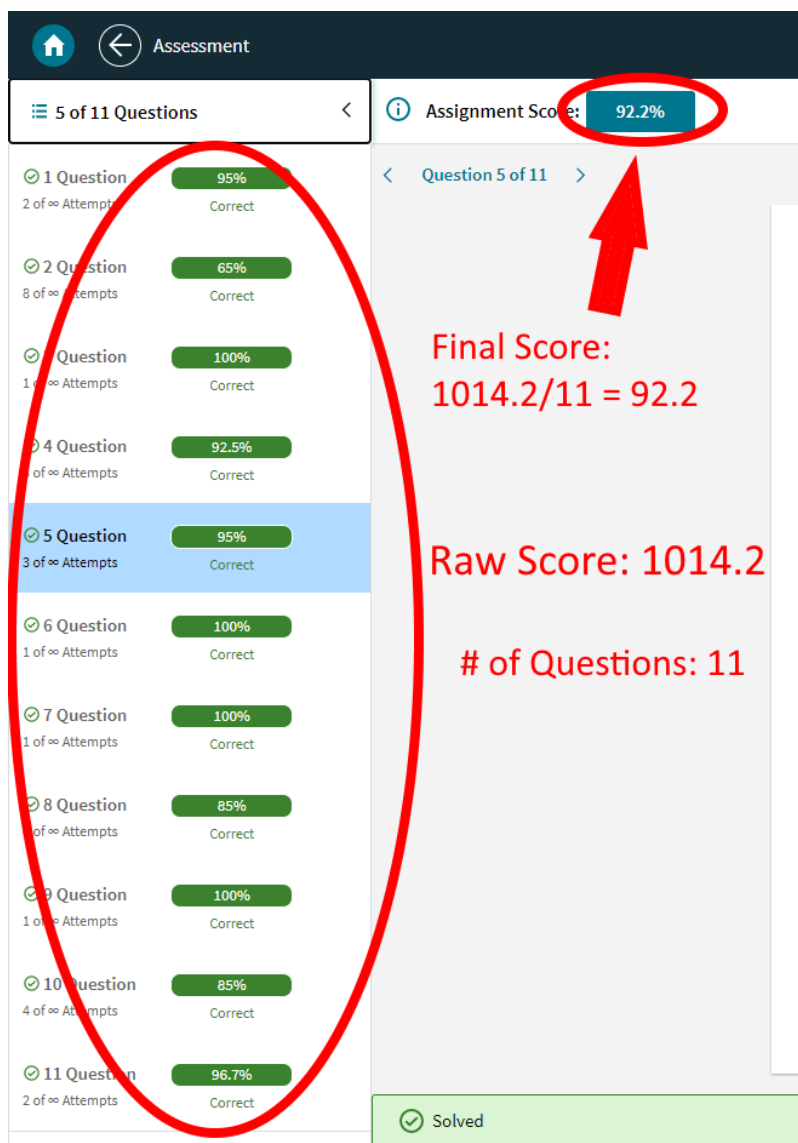
By: Savion E. Watson

Background

(Note to reader: View this document at a higher zoom level such as 130% or 120% to see smaller images)

Hello, this is a guide for a simple program called the: “Achieve Percentage Calculator”. You may be asking what is this program, and why was it made?

If you haven’t noticed already, whenever you complete an assignment in Achieve, you get a score. This score is the **average** of your **individual question scores**.



As you complete individual questions, your assignment score is shown at the top of the screen. As you complete a question, every incorrect answer lowers your score, with the deductions varying depending on the question. However, the score for the question you're completing doesn't appear until you **finish** the question.

"Then what is that gray number that appears as I answer the question?"

That number shows you how close to full credit your **current attempt** was.

The screenshot shows an assessment interface with a dark header bar containing a home icon and a back arrow, followed by the word "Assessment". Below the header, there is a progress bar showing "2 of 3 Questions". To the right of the progress bar, the "Assignment Score" is displayed as "50%", which is circled in red. Below the progress bar, there are three question cards. The first card shows "1 Question" with a "100%" score and "Correct" status. The second card, which is highlighted in blue, shows "2 Question" with a "50%" score and "In Progress" status; this card is also circled in red. The third card shows "3 Question" with a "0%" score. A red arrow points from the "50%" score in the second question card to a text box that says "Both the Assignment Score and the question score are 50%". The main content area on the right shows the question text: "Find all critical points of $f(x) = 9x^3 + 9x^{-3}$. (Use symbolic notation and fractions where needed. Give your answer in the form of a comma SOLUTION if the function has no critical points.)". Below the question text, there is a text input field with the answer "-1,1". Below the input field, there is a true/false question: "The First Derivative Test shows that the greatest critical point of f is a local minimum." with "True" and "False" options. The "False" option is selected, and the word "Incorrect" is displayed in red below the options.

Both the Assignment Score and the question score are 50%

This score is not reflective of what your final score might be. Your question score is dependent on how many parts of your attempts were correct, and your final score is the average of your question scores. Take note of the two images below:

The screenshot shows an 'Assessment' interface. On the left, a sidebar lists three questions: Question 1 (100%, Correct), Question 2 (97.5%, Correct), and Question 3 (95%, Correct). Question 2 is highlighted. The main area displays the question: 'Find all critical points of $f(x) = 9x^3 + 9x^{-3}$. (Use symbolic notation and fractions where needed. Give your answer in the form of a comma separated list. Enter NO SOLUTION if the function has no critical points.)' The answer field contains '-1,1'. Below the answer field, it says 'The First Derivative Test shows that the greatest critical point of f is a local minimum.' On the right, a dropdown menu shows 'My Attempt', 'Question', 'Attempt 1', and 'My Attempt'. A red circle highlights the 'Attempt 1' option. A red arrow points from the 'Attempt 1' option to a text box.

The final Question Score is 97.5%, **even though** I eventually got the entire question right in the end. This is because my **first attempt** was only 50%

The screenshot shows the same 'Assessment' interface. The sidebar shows the same question scores. The main area displays the same question and answer. On the right, the dropdown menu shows 'My Attempt', 'Question', 'Attempt 1', and 'My Attempt'. A red circle highlights the 'Attempt 1' option. A red arrow points from the 'Attempt 1' option to a text box.

The final Assignment Score is also 97.5%, BUT this is the average of 100% + 97.5% + 95%

“Why would I want to know my score before I complete a question?”

Teachers who assign Achieve work often give credit based on the assignment score. If you're having trouble with a question and have many failed attempts. Remember that hovering over an incomplete question only gives you the score

for your **current attempt**, not the aggregate of all your attempts. Using the Achieve Question Score Calculator will let you gauge when you should stop giving incorrect, get help, and save your homework grade!

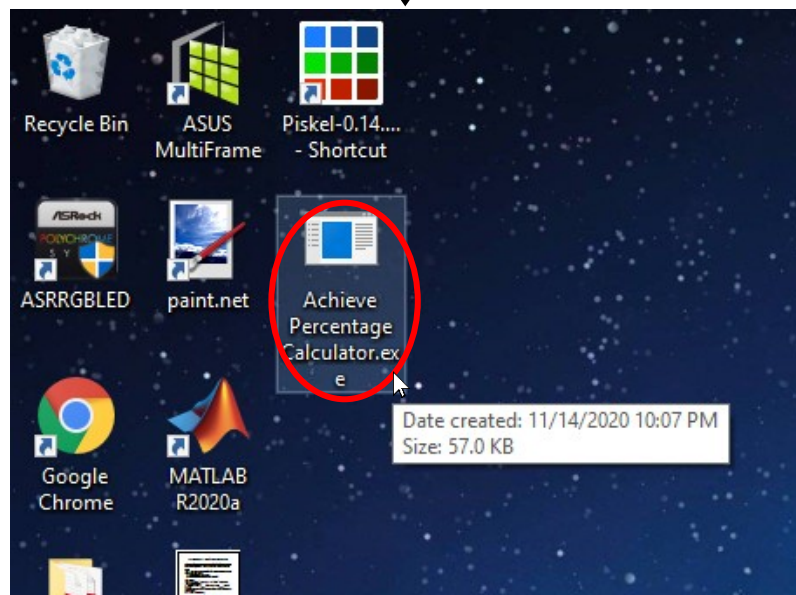
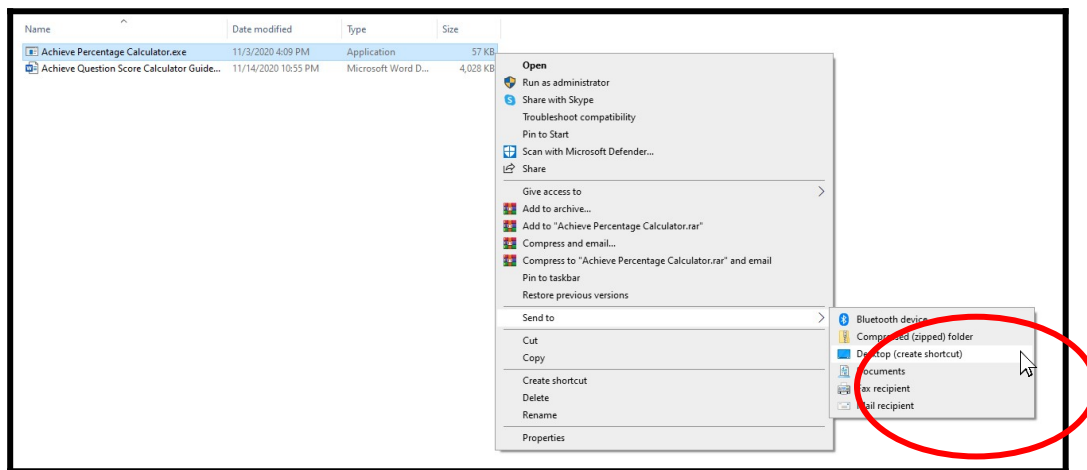
This is especially useful to know given that Achieve questions only change numbers **slightly** for each problem for students in the same class completing the same assignment. Therefore, if your friend manages to complete a question you had trouble with, it's likely they'll know what to do!

Read the instructions below to get started!

Instructions

Step 1: Run the program

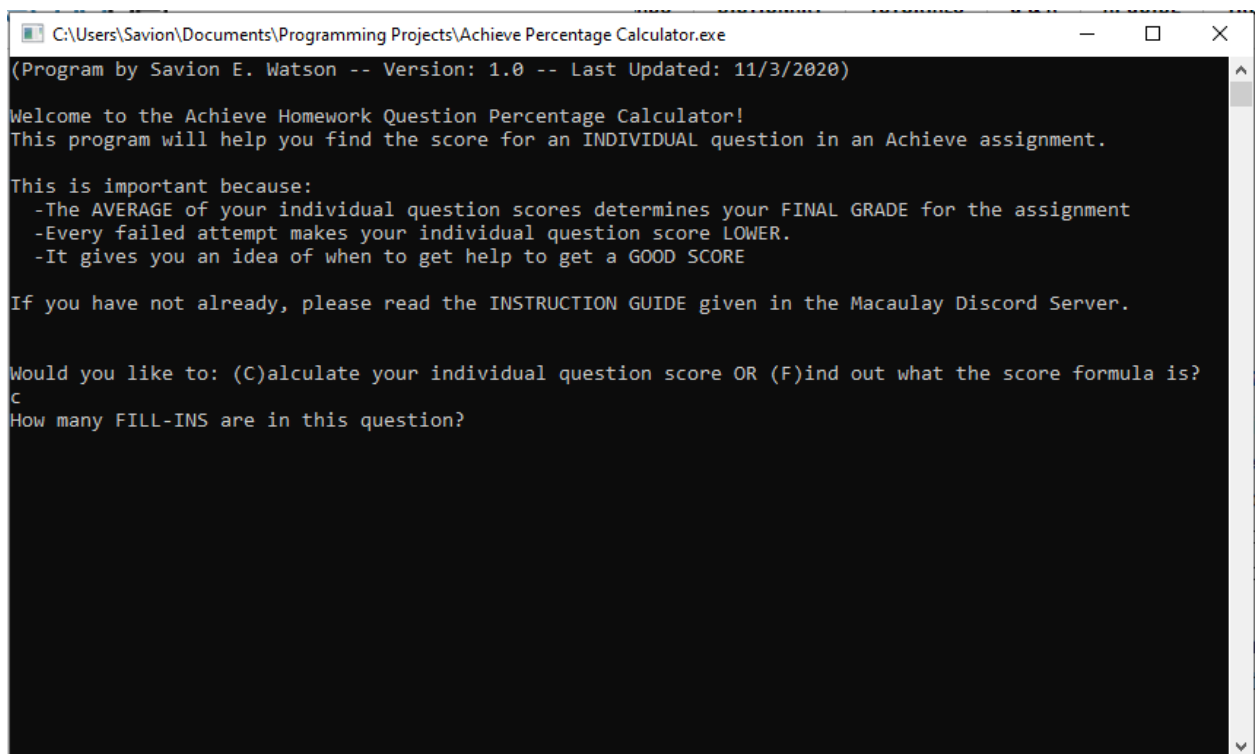
The program is contained in a ".exe" file or executable. Before you run it, right click it, hover over "Send to" and click "Desktop" to place it on your computer's desktop for easy access. Afterward, double click the program to run it.



Step 2: Understanding Fill-ins

The score calculator runs your computer's *Command Prompt* or *Command Window* and acts as a command-line interpreter. This window allows you to do almost anything in your computer without the need for any user interface created by your Operating System. But don't let the lack of pretty graphics scare you! The program not only serves a simple function, but it is also simple to use.

After reading the short description, go down to the line that reads: "Would you like to: (C)alculate your individual question score OR (F)ind out what the score formula is?"

A screenshot of a Windows command prompt window titled "C:\Users\Savion\Documents\Programming Projects\Achieve Percentage Calculator.exe". The window has standard Windows window controls (minimize, maximize, close) in the top right. The text inside the window is as follows:

```
(Program by Savion E. Watson -- Version: 1.0 -- Last Updated: 11/3/2020)

Welcome to the Achieve Homework Question Percentage Calculator!
This program will help you find the score for an INDIVIDUAL question in an Achieve assignment.

This is important because:
  -The AVERAGE of your individual question scores determines your FINAL GRADE for the assignment
  -Every failed attempt makes your individual question score LOWER.
  -It gives you an idea of when to get help to get a GOOD SCORE

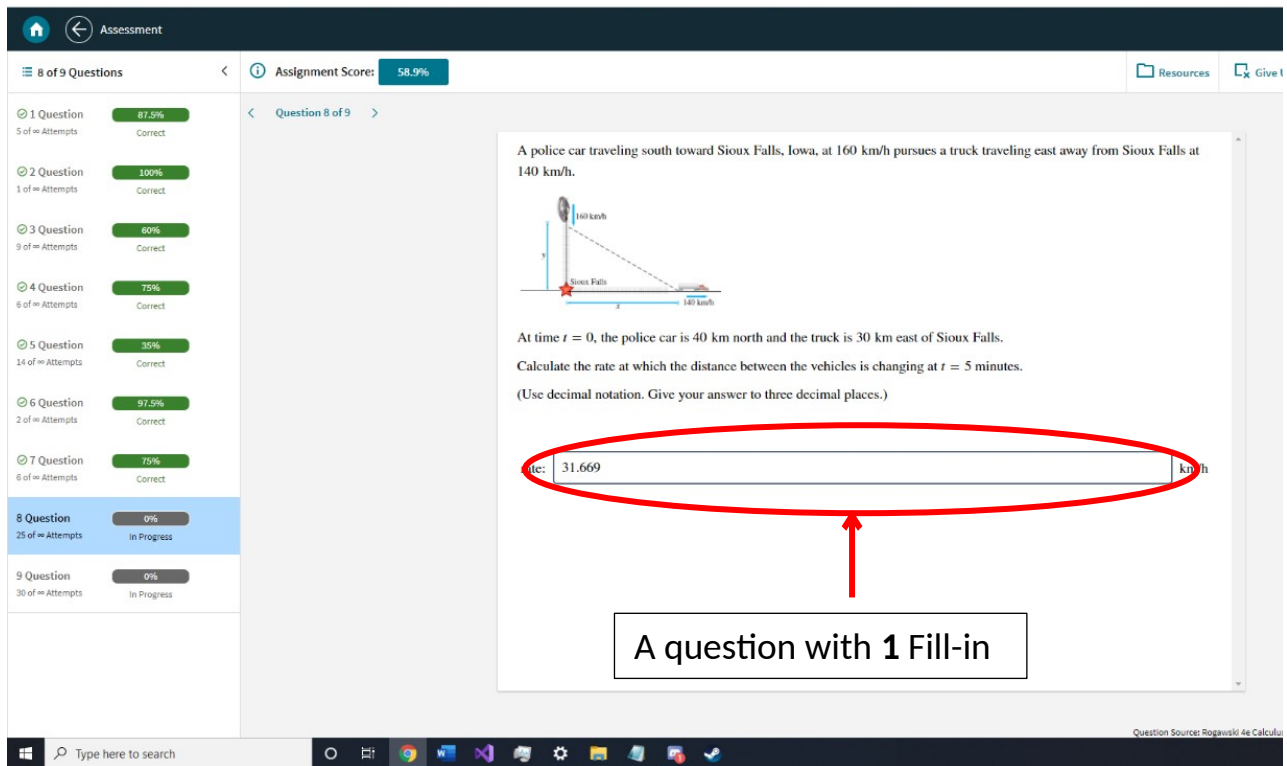
If you have not already, please read the INSTRUCTION GUIDE given in the Macaulay Discord Server.

Would you like to: (C)alculate your individual question score OR (F)ind out what the score formula is?
C
How many FILL-INS are in this question?
```

Press the "C" key, then the "Enter" key to start calculating your score.

Press the "F" key, then the "Enter" key to see the formula that drives the program.

When you start to calculate your score you will see text that says: “How many **FILL-INS** are in this question?”. **Fill-ins** are every part of a question that need to be answered correctly to receive a final score. They **are not** the number of questions themselves. You can tell if something is a **Fill-in** if there is a box you can type inside of.



Assessment

8 of 9 Questions

Assignment Score: 58.9%

Question 8 of 9

A police car traveling south toward Sioux Falls, Iowa, at 160 km/h pursues a truck traveling east away from Sioux Falls at 140 km/h.

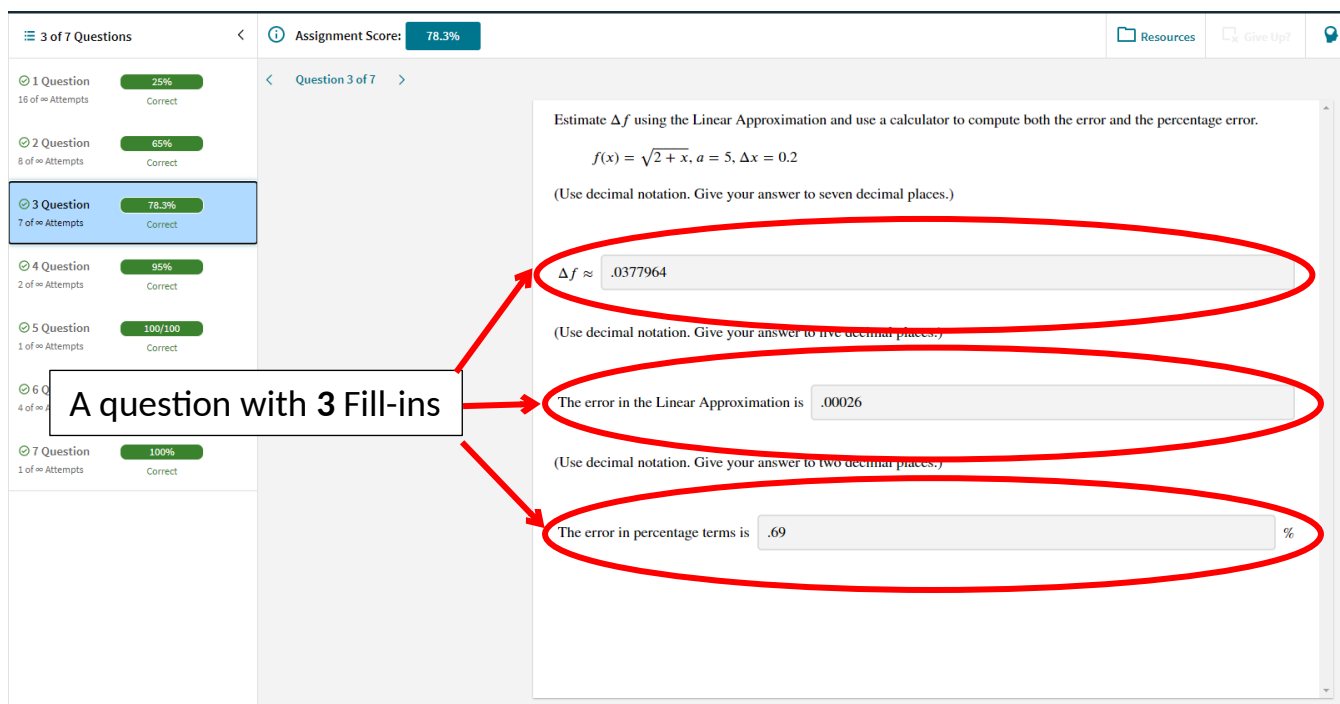
At time $t = 0$, the police car is 40 km north and the truck is 30 km east of Sioux Falls.

Calculate the rate at which the distance between the vehicles is changing at $t = 5$ minutes.

(Use decimal notation. Give your answer to three decimal places.)

31.669 km/h

A question with 1 Fill-in



3 of 7 Questions

Assignment Score: 78.3%

Question 3 of 7

Estimate Δf using the Linear Approximation and use a calculator to compute both the error and the percentage error.

$f(x) = \sqrt{2+x}$, $a = 5$, $\Delta x = 0.2$

(Use decimal notation. Give your answer to seven decimal places.)

$\Delta f \approx .0377964$

(Use decimal notation. Give your answer to five decimal places.)

The error in the Linear Approximation is .00026

(Use decimal notation. Give your answer to two decimal places.)

The error in percentage terms is .69 %

A question with 3 Fill-ins

Some questions will have you select multiple boxes next statements that meet a certain criterion. Each of these boxes **is not** a Fill-in, rather, the question itself is a Fill-in.

It is also worth noting that while you can get part of a question right, you **cannot** get partial credit for Fill-ins. Fill-ins are either right or wrong, and you can get partial credit for a whole question or an **Attempt** depending on how many Fill-ins there are, and how many are correct. More on this later.

With this in mind, marking only **some** of the correct boxes for a Fill-in ends with the Fill-in being **incorrect** and **not partial credit**.

< Question 10 of 11 >

Consider the graph of a function f on the interval $[0, 4]$.

A question with 1 Fill-in. The first attempt is wrong, despite having some of the correct boxes checked

Identify all correct statements about the extreme values of f .

- ☒ f has three local minima. ← **Incorrect**
- ☒ f has two local maxima.
- ☐ f has one local minimum.
- ☒ f has five critical points. ← **Incorrect**
- ☒ f has an absolute maximum at a critical point and an absolute minimum at an endpoint.

Incorrect

Feedback

At least one of the statements you have selected is incorrect.

Recall that a local maximum is the highest point on the graph on some open interval, and a local minimum is the lowest point on the graph on some open interval.

Recall absolute extrema occur at either a critical point or one of the endpoints of the closed interval.

< Question 10 of 11 >

Consider the graph of a function f on the interval $[0, 4]$.

The same question with 1 Fill-in. This attempt is correct, as it has **every** needed box checked

Identify all correct statements about the extreme values of f .

- ☐ f has three local minima.
- ☒ f has two local maxima. ← **Correct**
- ☒ f has one local minimum. ← **Correct**
- ☐ f has five critical points.
- ☒ f has an absolute maximum at a critical point and an absolute minimum at an endpoint. ← **Correct**

Solved

Question Source: Rogawski 4e Calculus Early Transcendentals | Publisher: W.H. Freeman

Step 3: Understanding Attempts

In Achieve, an **Attempt** is any time you try to submit an answer for a question. You can see the Attempts you have for a certain question in the upper right-hand corner of the screen. Click on the box to see how many Attempts you have. Click on each Attempt number to see which Fill-ins you got incorrect.

The screenshot shows a question interface. At the top, the assignment score is 92.2%. The question is "Question 10 of 11". The main content area displays a graph of a function f on the interval $[0, 4]$. The graph has a local maximum at $x \approx 1.2$ and $x \approx 3.2$, and a local minimum at $x \approx 2.2$. The y-axis ranges from 0 to 10. Below the graph, the question asks to "Identify all correct statements about the extreme values of f ." and lists five statements with checkboxes. A red arrow points from a text box stating "There are 3 incorrect Attempts for this question." to the attempts list in the top right corner. The attempts list shows "My Attempt" (correct), "Attempt 1" (incorrect), "Attempt 2" (incorrect), "Attempt 3" (incorrect), and "My Attempt" (correct).

Assignment Score: 92.2%

Resources Solution Solved

Question 10 of 11

Consider the graph of a function f on the interval $[0, 4]$.

Identify all correct statements about the extreme values of f .

- ☐ f has three local minima.
- ☒ f has two local maxima.
- ☒ f has one local minimum.
- ☐ f has five critical points.
- ☒ f has an absolute maximum at a critical point and an absolute minimum at an endpoint.

There are 3 incorrect Attempts for this question.

My Attempt Question Attempt 1 Attempt 2 Attempt 3 My Attempt

The Achieve Score Calculator program will ask for your current number of (incorrect) attempts by printing: "How many *INCORRECT* attempts do you have for this question?" As the attempts are listed in number order, scroll down to the last Attempt, and look at the number next to it. For example, in the image above, I would have 3 incorrect Attempts. If you try a question, and get the entire question correct, your Attempt is recorded as "**My Attempt**". This Attempt does not add to your question score.

Type your number of incorrect attempts into the program and press "Enter".

Step 4: Looking at Fill-ins in each Attempt

Here comes the most important part of the program: looking at Fill-ins.

As mentioned earlier, each incorrect Attempt has at least one Fill-in incorrect. In order for the program to calculate your question score, it needs to know how many Fill-ins were incorrect for **each** Attempt. You are prompted to enter your number of incorrect Fill-ins with: “How many fill-ins did you get wrong in attempt number: (number) ?”

Let's walk through a question to illustrate this. I finished a question with a score of **92.5%** and **2** incorrect Attempts.

Assessment

Assignment Score: 92.2%

Question 4 of 11

Find the maximum and minimum values of the function $f(\theta) = -3\sqrt{2}\theta + 3\sec(\theta)$ on the interval $[0, \frac{\pi}{3}]$ by comparing values at the critical points and endpoints.
(Use decimal notation. Give your answers to three decimal places, if necessary.)

$f_{\min} =$.91

$f_{\max} =$ 3

After 3 Attempts, the final score of the question is 92.5%.

Question Source: Rogawski 4e Calculus Early Transcendentals | Publisher: W.H. Freeman

The question has 2 Fill-ins. For Attempt #1, I got 2 Fill-ins incorrect. For Attempt #2, I got 1 Fill-in incorrect. When I scroll past the initial description, my Command Window looks like this:

```
C:\Users\Savion\Documents\Programming Projects\Achieve Percentage Calculator.exe
This program will help you find the score for an INDIVIDUAL question in an Achieve assignment.
This is important because:
-The AVERAGE of your individual question scores determines your FINAL GRADE for the assignment
-Every failed attempt makes your individual question score LOWER.
-It gives you an idea of when to get help to get a GOOD SCORE
If you have not already, please read the INSTRUCTION GUIDE given in the Macaulay Discord Server.
Would you like to: (C)alculate your individual question score OR (F)ind out what the score formula is?
c
How many FILL-INS are in this question?
2
How many INCORRECT attempts do you have for this question?
2
How many fill-ins did you get wrong in attempt number: 1 ?
Incorrect fill-ins are NOT attempts.
Count how many boxes have RED outlines across all of your attempts.
2
How many fill-ins did you get wrong in attempt number: 2 ?
Incorrect fill-ins are NOT attempts.
Count how many boxes have RED outlines across all of your attempts.
1
Your current score is: 92.5
Get your next attempt right to earn this score!
```

Here are some screenshots of my completed question to verify.

Assessment

4 of 11 Questions

Assignment Score: 92.2%

Question 4 of 11

Find the maximum and minimum values of the function $f(\theta) = -3\sqrt{2}\theta + 3\sec(\theta)$ on the interval $[0, \frac{\pi}{3}]$ by comparing values at the critical points and endpoints.
(Use decimal notation. Give your answers to three decimal places, if necessary.)

$f_{\min} =$.785
Incorrect

$f_{\max} =$ 0
Incorrect

Attempt 1

Question

Attempt 1

Attempt 2

My Attempt

Solved

Question Source: Rogawski 4e Calculus Early Transcendentals | Publisher: W.H. Freeman

There are 2 incorrect Fill-ins for Attempt #1. This is shown by the red boxes and "Incorrect" sub-text that appears two times.

Assessment

4 of 11 Questions

Assignment Score: 92.2%

Question 4 of 11

Find the maximum and minimum values of the function $f(\theta) = -3\sqrt{2}\theta + 3\sec(\theta)$ on the interval $[0, \frac{\pi}{3}]$ by comparing values at the critical points and endpoints.
(Use decimal notation. Give your answers to three decimal places, if necessary.)

$f_{\min} =$.91
Incorrect

$f_{\max} =$ 1.557
Incorrect

Attempt 2

Question

Attempt 1

Attempt 2

My Attempt

Solved

Question Source: Rogawski 4e Calculus Early Transcendentals | Publisher: W.H. Freeman

The final score of the question is 92.5%, just like we mentioned before.

There is 1 incorrect Fill-ins for Attempt #2. This is shown by the red box and "Incorrect" sub-text that appear once.

Once you finish calculating your score, type “y” or “n” and press “enter” to calculate another score or exit the program (respectively).

Cool right? So, how exactly does the program work?

Program Formula Deconstruction

The program is based off of the following formula:

$$\underline{\text{Score}} = 100 - 5(a / f)$$

a = The ***total*** number of incorrect fill-ins

f = The number of fill-ins the question has

I came up with this formula by analyzing many of my past homework attempts and noticing patterns among the same types of questions. When questions had only 1 Fill-in, I noticed my score by always deducted by increments of 5%. However, when there were multiple fill-ins with varying correct fill-ins on each attempt, my score wasn't deducted in multiples of 5%, but instead *fractions* of 5%.

To confirm this, I also analyzed questions with checkboxes, to determine if each correct marking counted as its own point or fraction of a point.

When I was able to consistently calculate my scores with each of my completed homework assignments, I was confident enough to make it the basis of my program.

The formula can also be found inside the program by entering “F” after it starts.

Thank you for reading this guide, and may your grades prosper!

Credits

Original Program Idea: *Savion E. Watson*

Windows Version Developer: *Savion E. Watson*

Guide Author: *Savion E. Watson*

Mac Version Developer: *Buka Dikeocha*

Testing: *Buka Dikeocha*