



AP Calculus BC (AB Review) 4523

Readiness Assessment Test

Thank you for considering this course for your student. Here are some tips for success in the Readiness Assessment process.

- Please do not provide your student this assessment or its contents until you are ready for him or her to complete it in a single sitting with no books, notes, or outside help. It is intended to be a spot check of retained knowledge and skill.
- Make sure you have the latest version of this assessment. Ideally, please download it and have your student complete it within one week prior to enrollment.
- Completed Readiness Assessment materials for a course should be submitted immediately after you enroll in the course.
- **Readiness Assessment materials must be submitted by uploading from the Family Account in the Enrolled Courses view.** Readiness Assessment materials are not accepted through email.
- Visit Live Chat, or email TPS Support (support@pottersschool.org) for questions or assistance.

Part I: Academic Background (to be completed by the parent)

Age/Grade

1. How old will your student be as of **October 1st** of the academic enrollment year?
2. What grade will your student be in **at the start of this course**?

Related Coursework

1. Please provide the following background information for the student's completed or in progress **AP Calculus AB** course or **equivalent course**:

Course Name:

- a. What is the student's in-progress or final course grade (numeric grade if available)?
- b. What is the name of the course provider (e.g., online provider, taught at home, local college)?
- c. What is the name of the course curriculum (title and name of publisher of primary text if known)?
- d. Is the student on-track to complete the entire course/curriculum by the end of the current year (if in-progress)?
- e. How is the course evaluated? Is the work self-checked, parent-checked, or evaluated outside the home?
- f. What percentage (if any) of the student's grade is based on assessments that are completed without access to notes or outside resources and completed in a single sitting without the opportunity for rework to improve the grade?

Additional Background

1. Is your student's first language English or a different language? If different, what is his or her language background? (**Note:** Most TPS classes are designed for native English speakers, but we also provide support at several levels for students whose first language is not English.)
2. Is there additional information that might help us better know your student and understand his or her unique abilities and needs for the best course placement and academic outcome?

Part II: AP Questionnaire (to be completed by the student)

TPS wants to help each AP student achieve his or her individual AP exam goals. The following information allows us to better support you in accomplishing your goals.

1. Are you planning to take the AP exam associated with this course?
2. If you are planning to take the associated AP exam, what is your score goal?

How do I decide my score goal? AP exams are scored as 1-5, where scores of 4 or 5 are competitive and a scores of 3, 4, or 5 may receive credit from participating colleges. To see what credit is available from specific colleges for specific exam scores, please go to this site:

<https://apstudents.collegeboard.org/getting-credit-placement/search-policies>

3. If you are planning to take the associated AP exam, have you identified an exam site that offers this exam near you?

Part III: Readiness Test (to be completed by the student)

- Please answer the following questions without using any resources (no notes, text, google, or other people) other than your knowledge.
- You **may** use a *scientific calculator* but you **may not** use a *graphing calculator*.

Show your work thoroughly in answering the following questions.

1. Solve for x : $y = \frac{e^x}{1+e^x}$

2. Solve the equation with exact answers: $\log_5 x + \log_5(2x - 5) = 2$

3. Evaluate $\lim_{x \rightarrow 4} \frac{x^2 - 7x + 12}{x^2 - 4x}$

4. Evaluate $\lim_{x \rightarrow \infty} \sqrt{\frac{x + 4x^2}{x^2 + 1}}$

5. Evaluate $\lim_{x \rightarrow \frac{\pi}{2}} \cos\left(\frac{x}{3} + \cos x\right)$

6. Find the equation for the tangent line to the graph of $y = \ln x$ at $x = e^2$

7. Find the derivative of $f(x) = \sqrt{x^2 + 4x}$.

8. Find the derivative of $f(x) = \sin^3 x$ at the point where $x = \frac{\pi}{6}$

9. Find $\frac{dy}{dx}$ of $y = x^3 \sin(5x)$.

10. Find $f'(x)$ for $f(x) = \frac{\sqrt{3x^2-2}}{4x+3}$

11. Apply implicit differentiation to find the derivative of: $\sin y = x^2 + xy + y^2$

12. Find the interval where $f(x) = x + e^{-2x}$ is increasing using derivatives.

13. Find the point of inflection for $f(x) = x^2 + \ln(3x)$ using derivatives.

14. Evaluate $\int (1 + \tan x)^3 \sec^2 x \, dx$

15. Evaluate $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} \, dx$

16. Evaluate $\int \frac{1}{1 + 9x^2} \, dx$

17. Evaluate the definite integral using the Fundamental Theorem of Calculus: $\int_1^6 \frac{3}{x^2} dx$

18. Find $F(5)$ if $F'(x) = 2x^3 + \frac{1}{x}$ and $F(1) = 2$

19. Find the area bounded between the curves $y = x^2$ and $y = 1 - x$.

20. Set up the integral to find the volume obtained by revolving the enclosed region bounded by $y = 2x^2 + 1$ and $y = x^2 + 5$ about the x -axis.