

**AP Calculus BC**

Q1 Interim Assessment

Test Booklet 1

Multiple Choice - Non-Calc

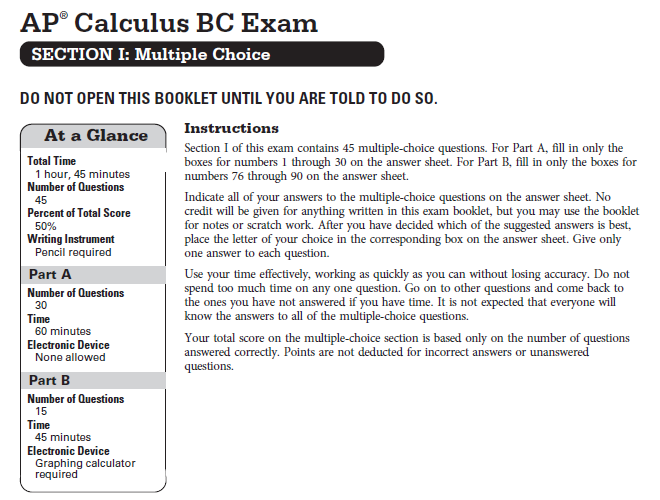
October 2017

School: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Teacher: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**CALCULUS BC**

**SECTION I, Part A**

**Time – 60 minutes**

**Number of questions – 30**

**NO CALCULATOR IS ALLOWED FOR THIS PART OF THE EXAM.**

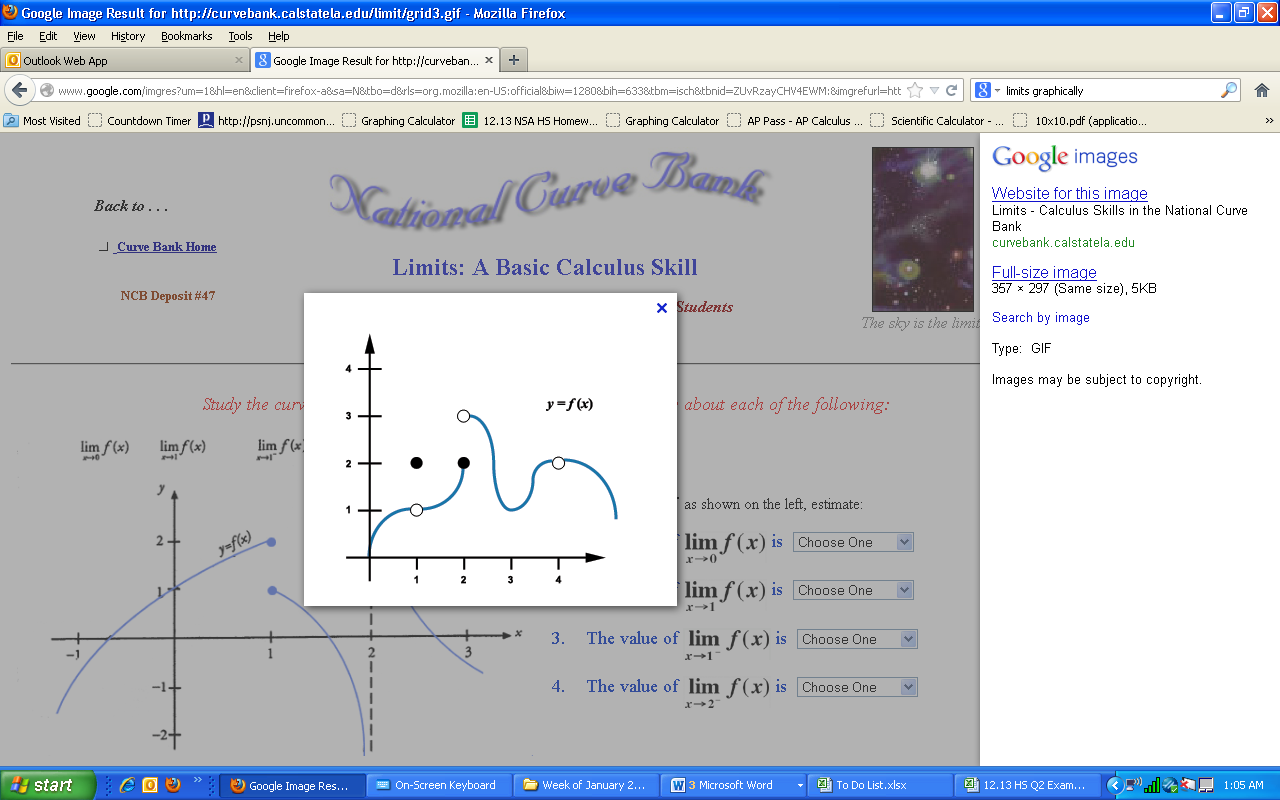
**Directions:** Solve each of the following problems, using the available space for scratch work. After examining the form for the choices, decide which of the choices given and place the letter of your choice in the corresponding box on the answer sheet. No credit will be given for anything written in this exam booklet. Do not spend too much time on any one problem.

**In this exam:**

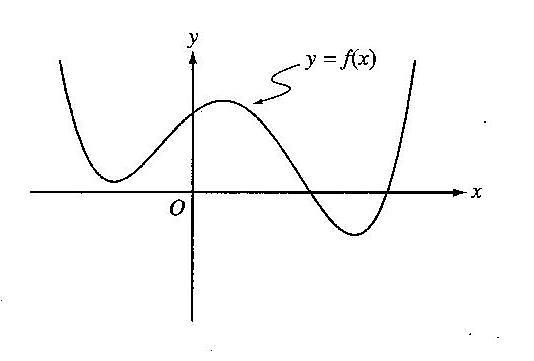
1. Unless otherwise specified, the domain of a function is assumed to be the set of all real numbers for which is a real number.
2. The inverse of a trigonometric function may be indicated using the inverse function notation or with the prefix “arc” (e.g., ).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

1. The function is continuous on the closed interval and has values as shown in the table above. Using the interval and , what is the approximation of obtained from a left rectangular approximation?
2. (B) (C) (D)



1. The graph of a function is shown above. For which of the following values of does ?
2. only
3. only
4. and only
5. and



1. The graph of is shown above. Which of the following could be the graph of?

|  |  |  |  |
| --- | --- | --- | --- |
| (A) |  | (B) |  |
| (C) |  | (D) |  |

1. The function is defined by . What points on the graph of have the property that the line tangent to at has slope ?
2. only
3. only
4. and
5. and
6. The function is twice differentiable with , , and . What is the value of the approximation of using the line tangent to the graph of at ?

(A) (B) (C) (D)

1. If , then has which of the following extrema?

I. A relative maximum at

II. A relative minimum at

III. A relative maximum at

(A) I only

(B) II only

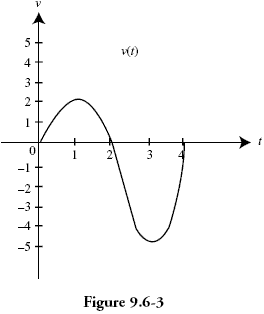
(C) I and II

(D) I, II, and III

(A) (B) (C) (D)

1. is

(A) (B) (C) (D) nonexistent



1. The velocity of a particle moving along the -axis is shown above for . The graph has horizontal tangents at and , and a zero at . For what values of is the speed of the particle decreasing?

(A) only

(B) only

(C) and

(D) and

1. If , then



6. If , on which of the following intervals is concave down?



11. The graph of which of the following equations has as an asymptote?



16. (B) (C) (D)
17. For hours, *H* is a differentiable function of *t* that gives the temperature, in degrees Celcius, at an arctic weather station. Which of the follow is the best interpretation of ?

(A) The change in temperature during the 24th hour.

(B) The average rate at which the temperature changed during the 24th hour.

(C) The rate at which the temperature is changing during the first day.

(D) The rate at which the temperature is changing at the end of the 24th hour.

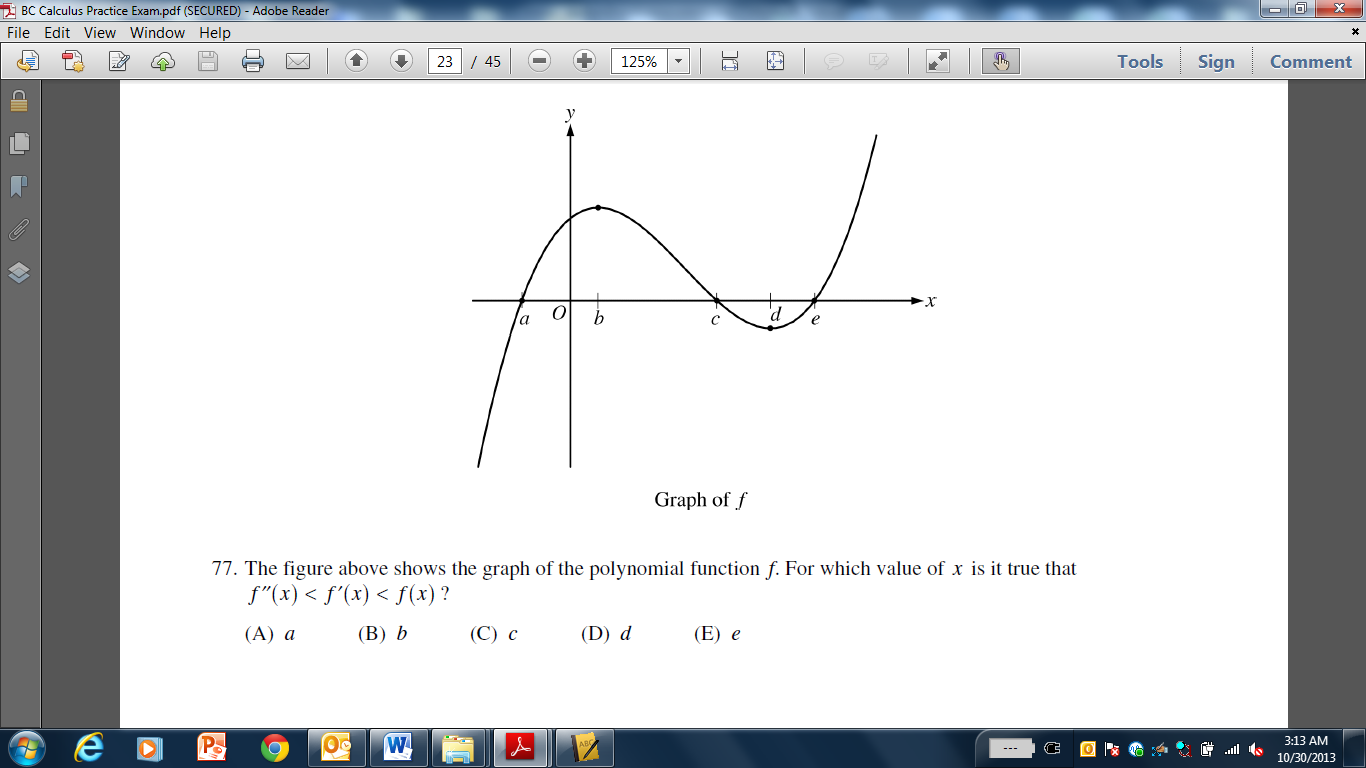


(A) (B) (C) (D)

1. A particle moves along the -axis with its position at time given by

, where and are constants and . For which of the following values of is the particle at rest?

4. and



1. The figure above shows the graph of the polynomial function . For which value of is it true that ?



6. In the -plane, what is the slope of the line tangent to the graph of at the point ?
7. (B) (C) (D)
8. Let be the function defined by . Which of the following is the equation of the line normal to the graph of at the point where ?

(A)

(B)

(C)

(D)

1. If is differentiable at , which of the following could be false?
2. is continuous at .
3. exists.
4. exists.
5. exists
6. If , then the absolute maximum value of on the closed interval occurs when



11. Find a positive value, , for , that satisfies the conclusion of the Mean Value Theorem for Derivatives for on the interval .
12. (B) (C) (D)
14. Let be the function defined above. Which of the following statements about are true?
15. has a limit at .
16. is continuous at .
17. is differentiable at .
18. I only
19. I and II only
20. I, II, and III
21. None

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | -4 | -3 | -2 | -1 |
|  | 0.75 | -1.5 | -2.25 | -1.5 |
|  | -3 | -1.5 | 0 | 1.5 |

1. The table above gives the values of a function and its derivative at selected values of . If is continuous on the interval , what is the value of ?
2. -4.5 (B) (C) (D) 2.25
3. If , then



8. Let and let be the inverse function of . Given that , what is the value of ?

(A) (B) (C) (D)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2 | 5 | 7 | 8 |
|  | 10 | 30 | 40 | 20 |

1. The function is continuous on the closed interval and has values that are given in the table above. Using the subintervals , , and , what is the trapezoidal approximation of
2. 130 (B) 160 (C) 190 (D) 210

**END OF PART A**

**IF YOU FINISH BEFORE TIME IS CALLED,**

**YOU MAY CHECK YOUR WORK ON PART A ONLY.**

**DO NOT GO ON TO PART B UNTIL YOU ARE TOLD TO DO SO**