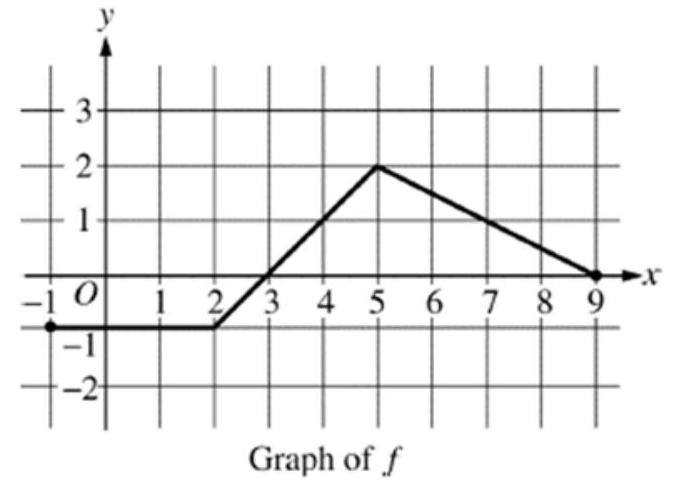
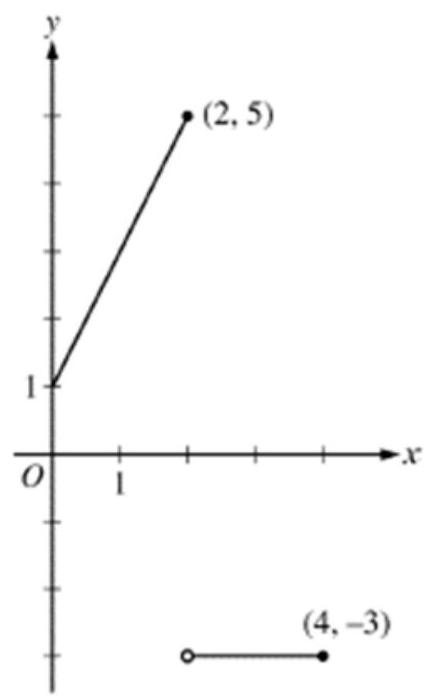
# BC Integrals and Their Applications

## Multiple Choice

1. (calculator not allowed)
2. (calculator not allowed) is
   1. divergent
3. (calculator not allowed)
4. (calculator allowed)  The graph of a piecewise linear function is given. What is the value of ?
   1. 7.5
   2. 9.5
   3. 27.5
   4. 47
   5. 48.5
5. (calculator not allowed) If and if when , what is the value of when
6. (calculator not allowed) Which of the following limits is equal to ?
7. (calculator allowed) If , then what is the value of
   1. 4
   2. 6
   3. 9
   4. 11
8. (calculator not allowed) A rain barrel collects water off the roof of a house during three hours of heavy rainfall. The height of the water in the barrel increases at a rate of feet per hour, where is the time In hours since the rain began. At time hour, the height of the water is 0.75 foot. Which of the following is the best interpretation of ?
   1. The average height of the water in the barrel, in feet, over the time interval [1,2] hours after the start of heavy rainfall.
   2. The change in the height of the water in the barrel, in feet, over the time interval [1,2] hours after the start of heavy rainfall
   3. The rate at which the height of the water in the barrel increases, feet per hour, over the time interval [1,2] hour after the start of heavy rainfall.
   4. The height of the water in the barrel, in feet, 2 hours after the start of heavy rainfall.
9. (calculator not allowed) Using the substitution is equal to which of the following?
10. (calculator not allowed) For what value of , if any, is ?
    1. 1
    2. 4
    3. There is no such value of .
11. (calculator not allowed)
12. (calculator not allowed) Let be a differentiable function such that . Which of the following could be ?
13. (calculator not allowed) Which of the following statements about the integral is true?
    1. The integral is equal to -2 .
    2. The integral is equal to 0 .
    3. The integral diverges because does not exist.
    4. The integral diverges because does not exist.

|  | 0 | 1 |
| --- | --- | --- |
|  | 2 | 4 |
|  | 6 | -3 |
|  | -4 | 3 |
|  | 2 | -1 |

1. (calculator not allowed) The table above gives values of , and for selected values of . If , then
   1. -14
   2. -13
   3. -2
   4. 7
   5. 15
2. (calculator not allowed)
3. (calculator not allowed)
4. (calculator not allowed)
   1. 0
   2. Divergent
5. (calculator not allowed)  Graph of The graph of is shown for . What is the value of ?
   1. -1
   2. 0
   3. 2
   4. 6
   5. 12
6. (calculator not allowed)
7. (calculator not allowed)
8. (calculator not allowed)
   1. Divergent
9. (calculator allowed) If and then
   1. 7.5
   2. 6.063
   3. 8.463
   4. 10.863