AP Calculus AB Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lesson 6-5 Learning Check Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***CALCULATOR ACTIVE***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *t*  (days) | 0 | 2 | 4 | 8 | 12 |
|  | 20 | 31 | 28 | 24 | 22 |

The temperature, in degrees Celsius , of the water in a pond is a differentiable function *W* of time *t*. The table above shows the water temperature as recorded over a 12 day period.

(a) Use data from the table to find an approximation for . Show computations that led to your answer. Indicate units of measure.

(b) Write an integral for the average temperature, in degrees Celsius, of the water over the time interval .

(c) Approximate the average temperature of the water, in degrees Celsius, by using a left Riemann sum with four sub-intervals.

(d) Approximate the average temperature of the water, in degrees Celsius, by using a midpoint Riemann sum with two sub-intervals.

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *t*  (days) | 0 | 2 | 4 | 8 | 12 |
|  | 20 | 31 | 28 | 24 | 22 |

(e) Approximate the average temperature of the water, in degrees Celsius, by using a trapezoidal approximation.

(f) The function models the rate of change of the temperature of the water for . Find the temperature of the water on day 18.