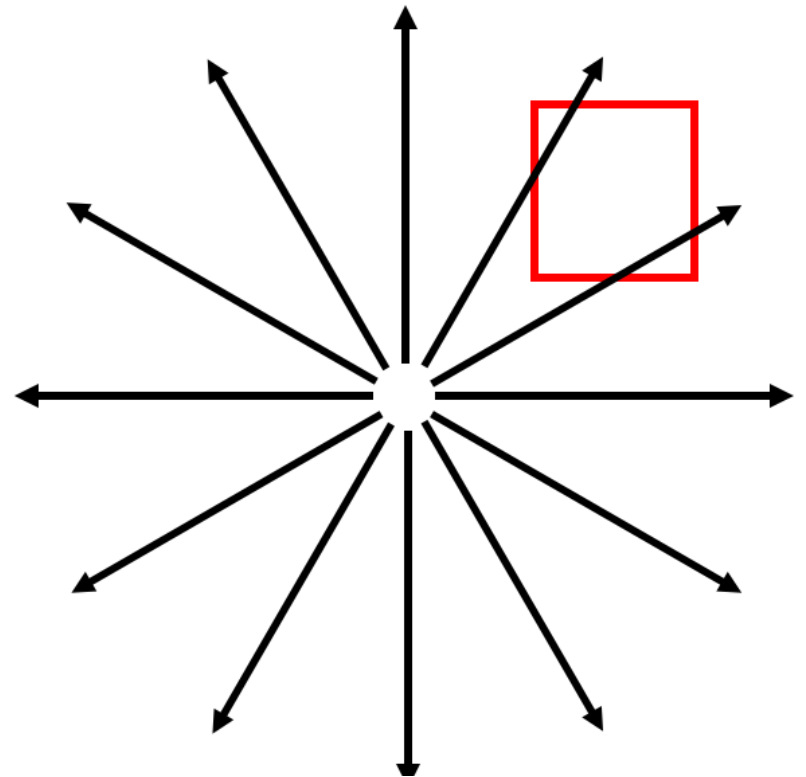


What is the divergence in the boxed region?

- A. Zero
- B. Not zero
- C. ???



Consider a vector field defined as the gradient of some well-behaved scalar function:

$$\mathbf{v}(x, y, z) = \nabla T(x, y, z).$$

What is the value of  $\oint_C \mathbf{v} \cdot d\mathbf{l}$ ?

- A. Zero
- B. Non-zero, but finite
- C. Can't tell without a function for  $T$

# ANNOUNCEMENTS

- Homework 1 solutions posted immediately after class
- Graded Homework 1 returned next Friday
- Homework 2 posted (due next Friday)
- WAMPS is organizing GRE study sessions
  - First session: Wed., Sept. 12 4-5 pm (BPS 1400)

**LET THE SHAMING  
BEGIN**

# REGISTER YOUR CLICKER!

- Adams, Joe
- Allen, Grant
- Bensley, Justin
- Bertus, Thomas
- Boyd, Brendan
- Briseno, Robert
- Brook, Evan
- Byrd, Benjamin
- Czyzewski, Austin
- Dara, Jacob
- Ding, Fang
- Evasic, Jacob
- Fowler, David

# AND IT COTINUES...

- Hindenach, John
- Jiang, Shan
- Lewis, Jim
- Li, Xingyu
- Li, Zihan
- Maestrales, Sarah
- Myers, Cody
- Osella, Anna
- Patel, Shivang
- Smith, Dylan
- Wallace, Ian
- Ward, Jenny

# AND YET, WE ARE NOT DONE...

- Wicklund, Courtney
- Wilks, Gavin
- Williams, Brandon
- Xu, Fu
- Zuzelski, Joel

**NOW WE ARE DONE.**

Register clicker here: <https://goo.gl/nrebCr>



For me, the first homework was ...

- A. entirely a review.
- B. mostly a review, but it had a few new things in it.
- C. somewhat of a review, but it had quite a few new things in it.
- D. completely new for me.

I spent ... hours on the first homework.

A. 1-2

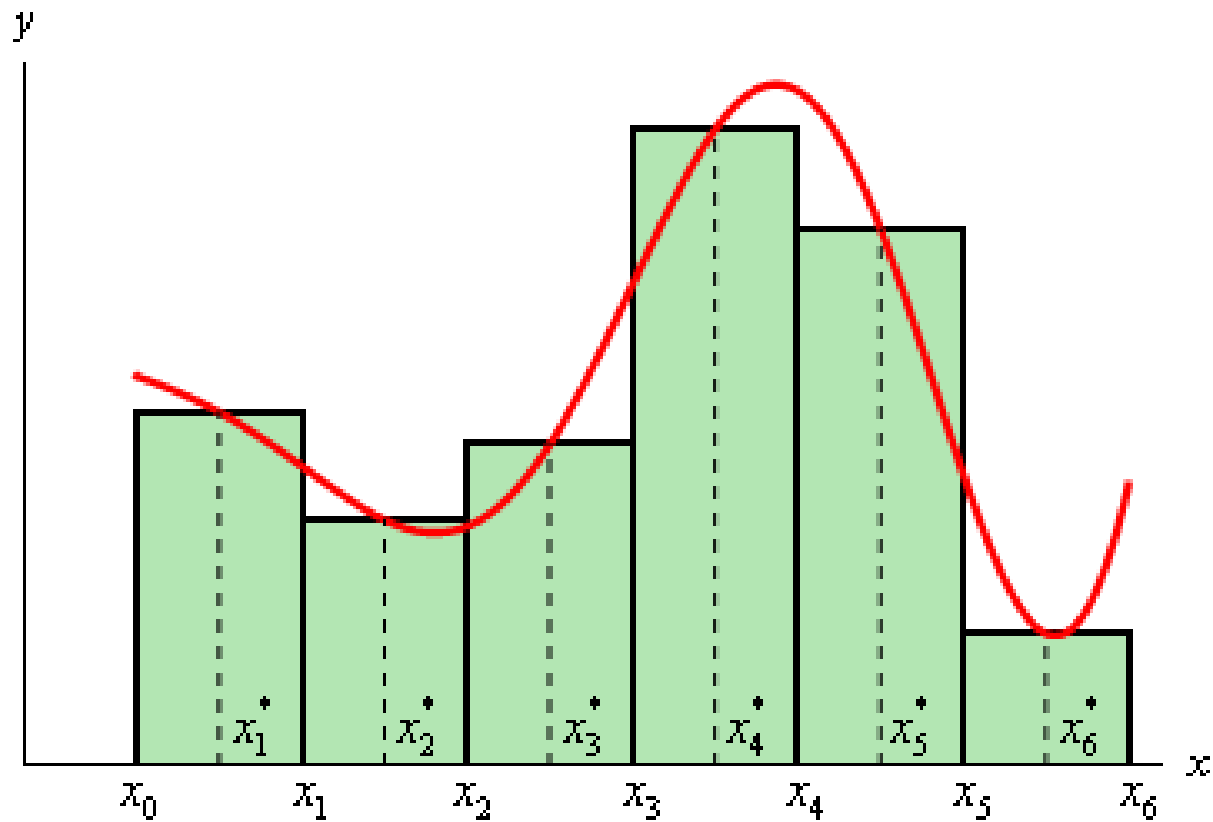
B. 3-4

C. 5-6

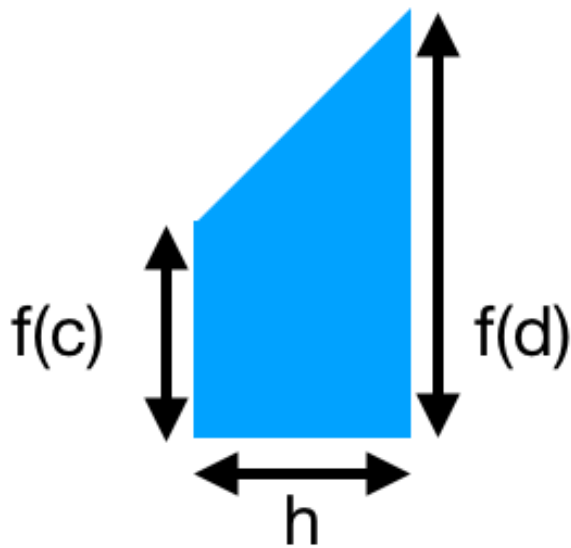
D. 7-8

E. More than 9

# NUMERICAL INTEGRATION



Consider this trapezoid



What is the area of this trapezoid?

A.  $f(c)h$

B.  $f(d)h$

C.  $f(c)h + \frac{1}{2}f(d)h$

D.  $\frac{1}{2}f(c)h + \frac{1}{2}f(d)h$

E. Something else

The trapezoidal rule for a function  $f(x)$  gives the area of the  $k$ th slice of width  $h$  to be,

$$A_k = \frac{1}{2}h (f(a + (k - 1)h) + f(a + kh))$$

What is the approximate integral,  $I(a, b) = \int_a^b f(x)dx$ ,

$$I(a, b) \approx$$

- A.  $\sum_{k=1}^N \frac{1}{2}h (f(a + (k - 1)h) + f(a + kh))$
- B.  $h \left( \frac{1}{2}f(a) + \frac{1}{2}f(b) + \frac{1}{2} \sum_{k=1}^{N-1} f(a + kh) \right)$
- C.  $h \left( \frac{1}{2}f(a) + \frac{1}{2}f(b) + \sum_{k=1}^{N-1} f(a + kh) \right)$
- D. None of these is correct.
- E. More than one is correct.

The trapezoidal rule takes into account the value and slope of the function. The next "best" approximation will also take into account:

- A. Concavity of the function
- B. Curvature of the function
- C. Unequally spaced intervals
- D. More than one of these
- E. Something else entirely