1. True or False?

$$\int_2^{10} \frac{dx}{x} = \ln(5).$$

2. True or False?

$$\int_0^{\pi} \sin(2x)\, dx = 0.$$

3. What is $\int_{-1}^{1} |2x^3|\, dx$?

(A) 0

(B) 1

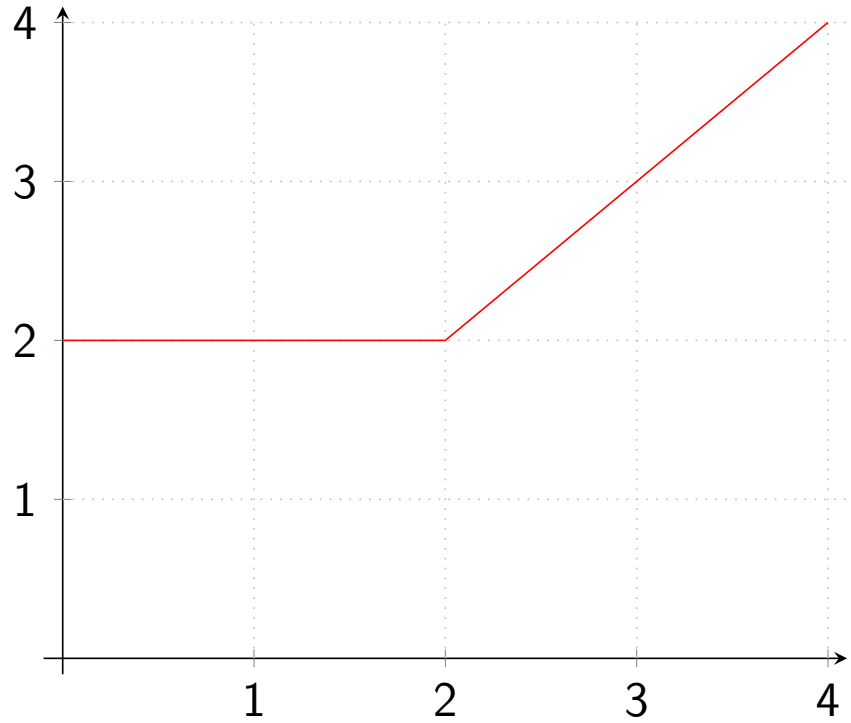
(C) 2

(D) None of the above

4. True or False?

The function $f(x) = |x|$ has an antiderivative.

5. The graph of a function f is depicted to the right.

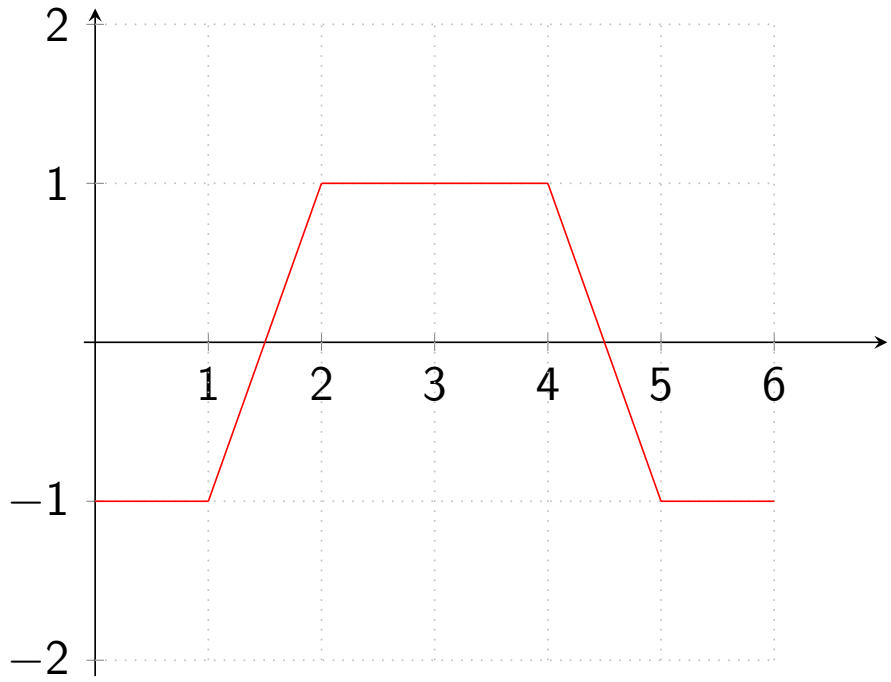


True or False?

$$\int_0^x f(t)\,dt = \begin{cases} 2x & \text{if } 0 \le x \le 2 \\ 2x + \dfrac{(x-2)^2}{2} & \text{if } 2 < x \le 4 \end{cases}$$

6. The graph of a function f is depicted to the right, and

$$A(x) = \int_0^x f(t)\,dt.$$



For which x does $A(x) = 0$?

(A) $x = 1$

(B) $x = 2$

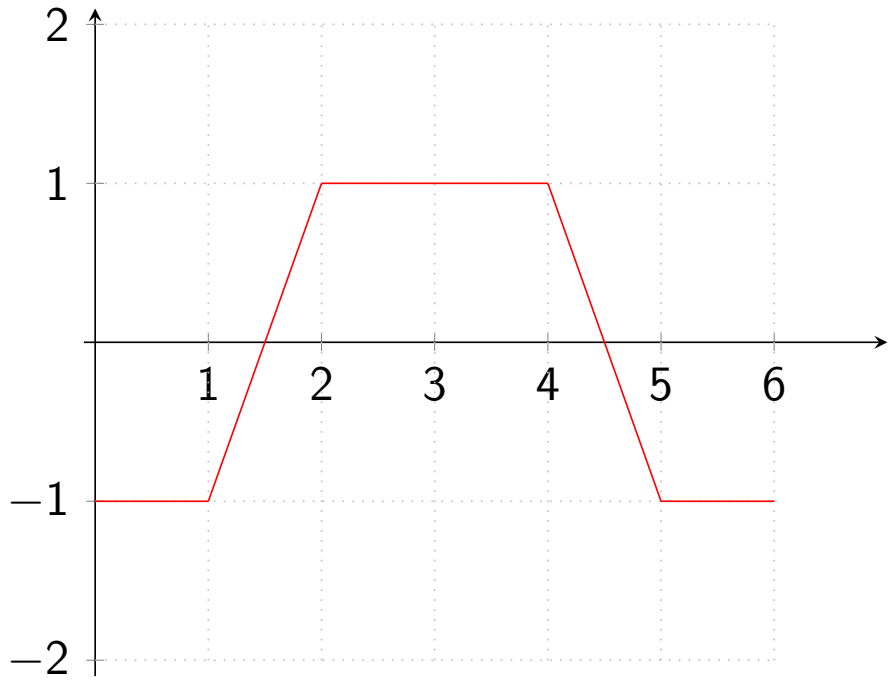
(C) $x = 3$

(D) None of the above

7. The graph of a function f is depicted to the right, and

$$A(x) = \int_0^x f(t)\,dt.$$

Where does A have a critical point?



(A) $x = 1$

(B) $x = 2$

(C) $x = 3$

(D) None of the above

8. Suppose F is a function such that $F(1) = 3$ and $F'(x) = x^2$. Then $F(4) = ...?$

(A) 20

(B) 22

(C) 24

(D) None of the above

9. True or False?

Let f be a differentiable function and

$$A(x) = \int_0^x f(t)\,dt.$$

If c is an inflection point of A, then c is a critical point of f.

10. True or False?

Let f be a differentiable function and

$$A(x) = \int_0^x f(t)\,dt.$$

If f is increasing, then A is concave up.

10. True or False?

Let f be a differentiable function and

$$A(x) = \int_0^x f(t)\,dt.$$

If f is increasing, then A is concave up.

Follow-up. What can you say if f is decreasing?