

Name _____

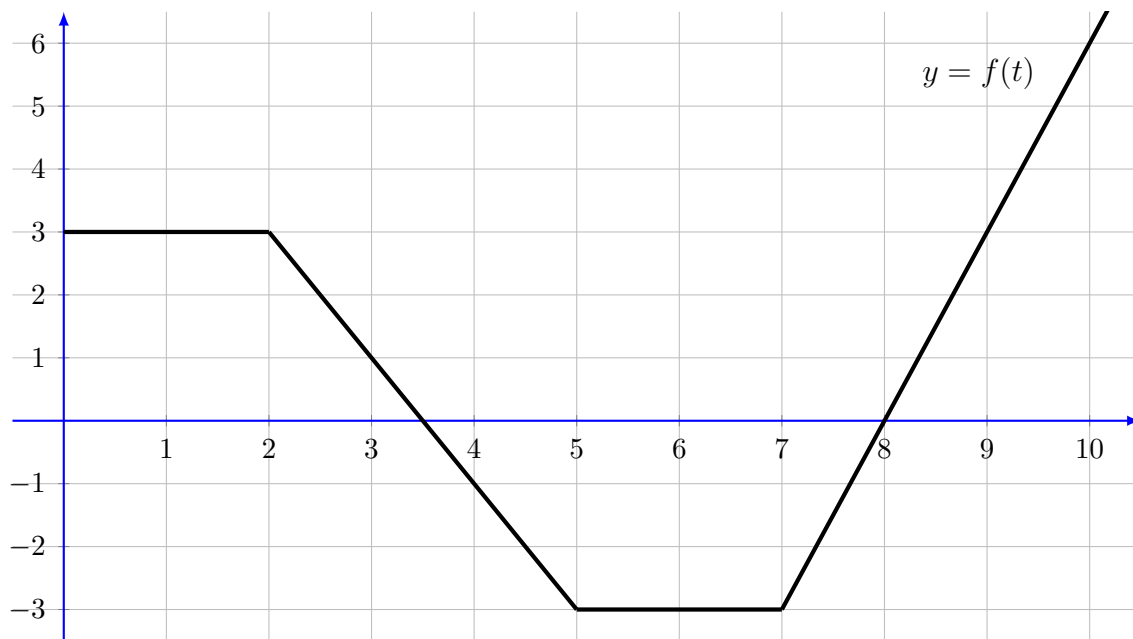
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Part I: Use the picture

The graph of a function f is sketched below. Define an “Area function” A by

$$A(x) = \int_2^x f(t) dt$$



Use the picture and the definition of A to answer these questions:

1. What is $A(2)$?
2. What is $A(4)$?
3. What is $A(0)$?
4. Where is A decreasing?
5. Where is the minimum of A ?
6. Where is A concave down?

Part II: Matching

Match the expression on the left with the appropriate choice on the right. Put the letter of the choice on the answer sheet.

7. $\int_0^8 |2x - 6| dx$

(a) $-\frac{2}{3}$

8. $\int_0^2 2x^2 - 3 dx$

(b) $\frac{\pi + 2}{4}$

9. $\int_0^1 x + \sqrt{1 - x^2} dx$

(c) $1 - \frac{1}{\sqrt{2}}$

10. $\int_0^{\frac{\sqrt{\pi}}{2}} 2x \sin(x^2) dx$

(d) $\frac{1}{3}$

11. $\lim_{n \rightarrow \infty} \sum_{i=1}^n \left(\frac{i}{n}\right)^2 \left(\frac{1}{n}\right)$

(e) 34

Part III: True or False

12. The function g defined by $g(x) = \int_0^x \sin(t^2) dt$ has an absolute maximum at $x = \sqrt{\pi}$.

13. $\frac{d}{dx} \left(\int_1^3 \sin(t^2) dt \right) = 0$.

14. If f' is continuous, then $\int_1^3 f'(v) dv = f(3) - f(1)$.

15. If f and g are integrable on the interval $[a, b]$ then

$$\int_a^b [5f(x) + g(x)] dx = 5 \int_a^b f(x) dx + \int_a^b g(x) dx.$$

16. If f and g are integrable on the interval $[a, b]$ then

$$\int_a^b f(x)g(x) dx = \left(\int_a^b f(x) dx \right) \left(\int_a^b g(x) dx \right).$$