

CALCULUS  
Antidifferentiation problems  
NEW

0560-1. Find all antiderivatives in  $x$  of

$$4x^3 + 2x + \sqrt[3]{2}.$$

0560-2. Find all antiderivatives in  $t$  of

$$\left(5\sqrt[3]{t} + \sqrt[4]{t}\right)t^6.$$

0560-3. Find all antiderivatives in  $t$  of

$$\frac{\sqrt[3]{t} + 8\sqrt[4]{t}}{\sqrt[5]{t}}.$$

0560-4. Find all antiderivatives in  $s$  of

$$\frac{\sqrt[3]{2}e^s - 5\sin s}{3}.$$

0560-5. Find the unique  $f(x)$  such that

$$f'(x) = 5x^4 - 3x^2 - 2x \quad \text{and} \quad f(0) = 2.$$

0560-6. Find the unique  $f(x)$  such that

$$f'(x) = \frac{3x^2 + 4}{x\sqrt[3]{x}} \quad \text{and} \quad f(1) = 8.$$

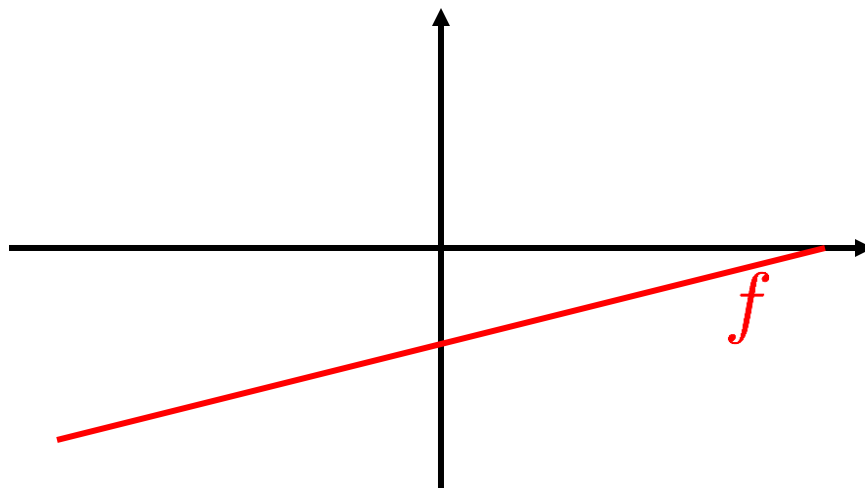
0560-7. Find the unique  $h(t)$  such that

$$h'(t) = 2\sin t - 7\cos t \quad \text{and} \quad h(0) = 2.$$

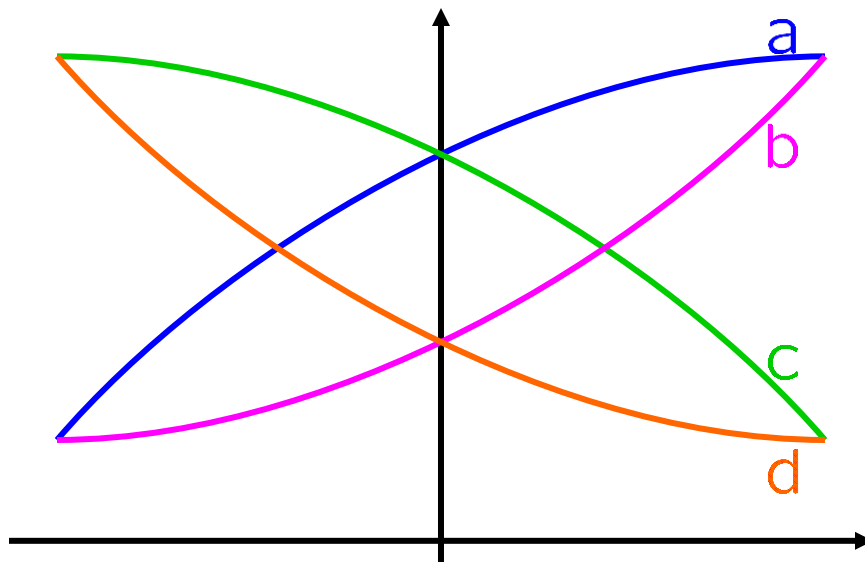
0560-8. Find the unique  $p(t)$  such that

$$p''(t) = \pi e^t + 2t^3, \quad p'(0) = 1 \quad \text{and} \quad p(0) = 2.$$

0560-9. The graph of  $f$  is shown below.

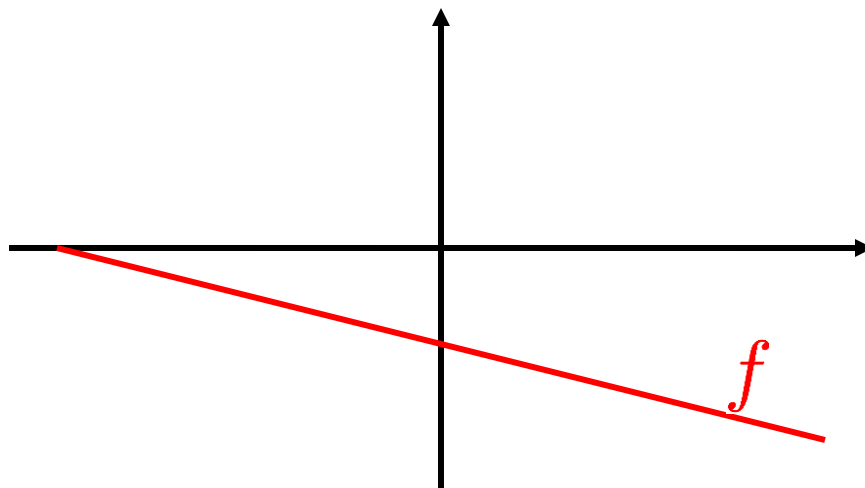


Which of the following could be the graph of an antiderivative of  $f$ ?

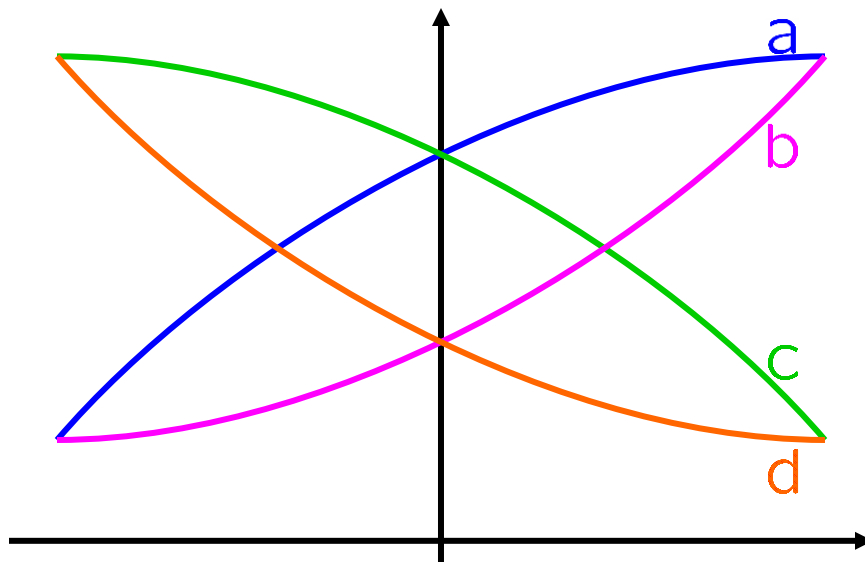


0560-10. The graph of  $f$  is shown below.

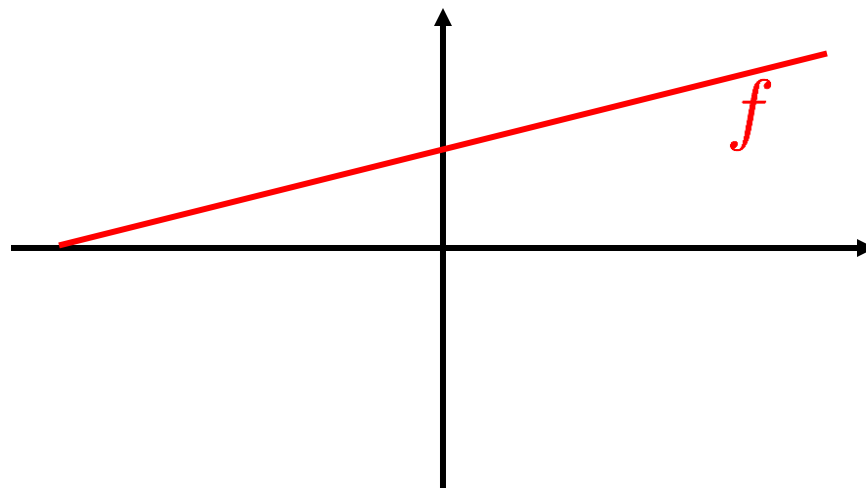
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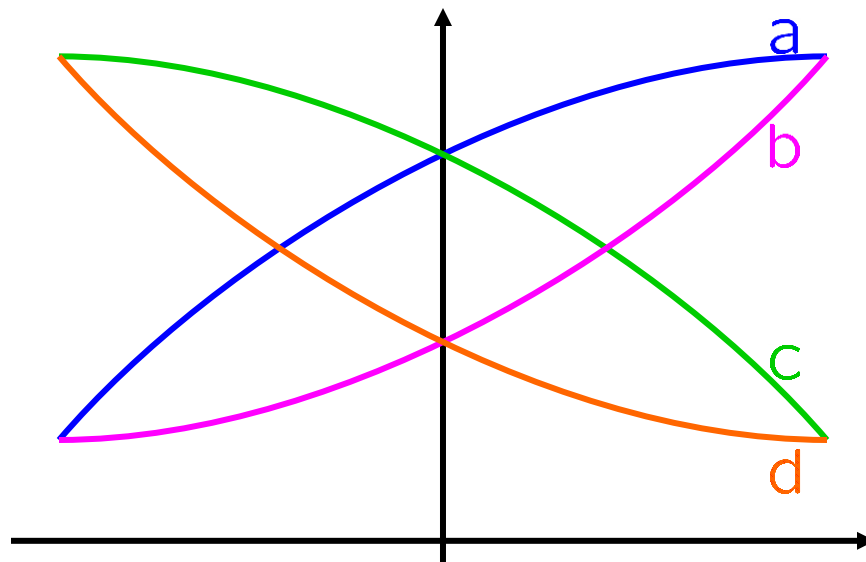
Which of the following could be the graph of an antiderivative of  $f$ ?



0560-11. The graph of  $f$  is shown below.

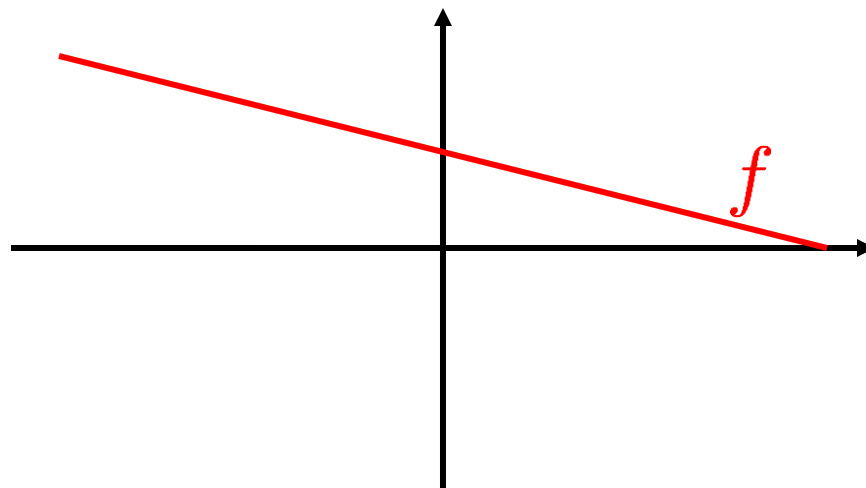


Which of the following could be the graph of an antiderivative of  $f$ ?

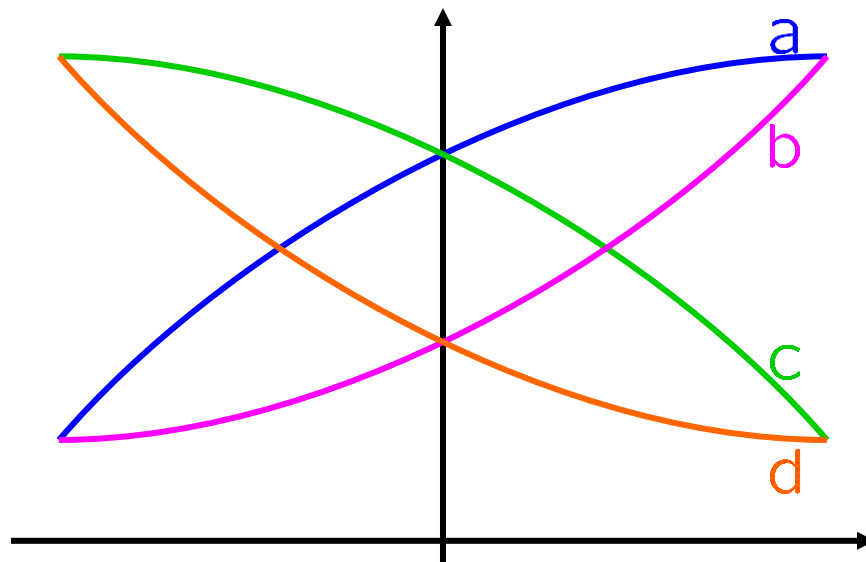


0560-12. The graph of  $f$  is shown below.

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Which of the following could be the graph of an antiderivative of  $f$ ?



0560-13. A particle travels on a number line.

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Suppose

its acceleration at time  $t$  is  $2t^2 + 3t - 1$ ,

its position at time 0 is 4

and its velocity at time 0 is 1.

Find an expression for its position at time  $t$ .

0560-14. We drop a heavy ball out of a window

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in a tall building. Its speed at the moment of impact with the ground is 176 feet per second.

From **what** height was it dropped?