

- Find and explain, for any real number E , $\int_0^E |2x| dx$
- Suppose $\int_R^E f(x) dx = 18$, $\int_R^E g(x) dx = 5$, $\int_R^E h(x) dx = -11$. Evaluate each of the following (if possible). Explain your work in all cases.
 - $\int_R^E (f(x) + g(x) - h(x)) dx$
 - $\int_R^E (f(x) - g(x) + h(x)) dx$
 - $\int_R^E (f(x) * g(x) * h(x)) dx$
- Suppose $\int_R^E f(x) dx = 18$, $\int_R^E g(x) dx = 5$, $\int_R^E h(x) dx = -11$. Evaluate each of the following (if possible). Explain your work in all cases.
 - $\int_R^E (f(x) + g(x)) dx - \int_E^R h(x) dx$
 - $\int_R^E (f(x) - g(x) - 2h(x)) dx$
 - $\int_R^E \left(\frac{f(x)}{g(x)}\right) dx$

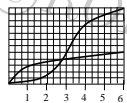
- Suppose R is an integrable function and that $\int_0^1 R(x) dx = 2$, $\int_0^2 R(x) dx = 1$, $\int_2^4 R(x) dx = 7$.

- Find and explain why $\int_0^4 R(x) dx$
- Find and explain why $\int_1^0 R(x) dx$
- Explain why $R(x)$ must be negative somewhere in the interval $[1, 2]$.

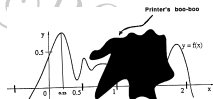
- Suppose R is an integrable function and that $\int_0^1 R(x) dx = 2$, $\int_0^2 R(x) dx = 1$, $\int_2^4 R(x) dx = 7$.

- Find and explain why $\int_1^2 R(x) dx$
- Find and explain why $\int_1^4 R(x) dx$
- Explain why $R(x) \geq 3.5$ for at least one value of $x \in [2, 4]$.

- Two cars start a race together at the starting line. Their velocities are shown in the graph. Explain when Car 2 will first pass car 1. Also, provide a graph of the total distance covered and the acceleration for each cars.



- Consider the function graphed on $[0, 2]$ below with the *printers error*. Explain why each of the following is positive, negative, exactly zero, or undetermined. $\int_0^2 f''(x) dx$ $\int_0^2 f'(x) dx$ $\int_0^2 f(x) dx$
- Consider the function graphed on $[0, 2]$ below with the *printers error*. Explain why each of the following is positive, negative, exactly zero, or undetermined. $\int_{0.25}^2 f''(x) dx$ $\int_{0.25}^1 f'(x) dx$ $\int_{0.25}^1 f(x) dx$
- Consider the function graphed on $[0, 2]$ below with the *printers error*. Explain why each of the following is positive, negative, exactly zero, or undetermined. $\int_0^{0.25} f''(x) dx$ $\int_1^2 f'(x) dx$ $\int_1^2 f(x) dx$



- Consider the four graphs below. If the graph labeled E is the graph of a function f , then which graph is an antiderivative of f ? f' ? Explain and label the other graphs in relation to f .

