

ACTIVITY

11a

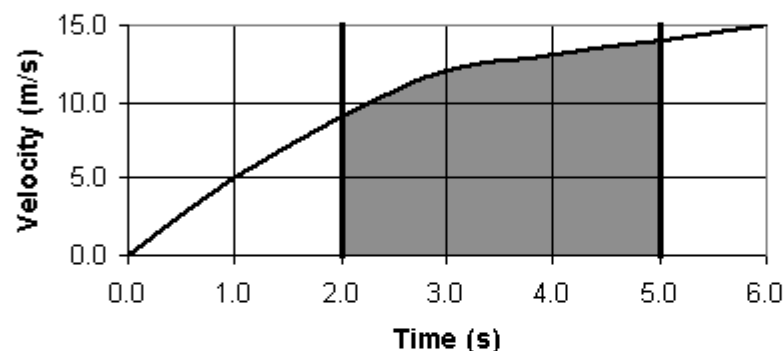
Connecting Math to Physics

More Complex Integrals

We cannot always find an exact integral with simple area formulae such as $A = lw$ or $A = (1/2)bh$. Often, the best we can do is an estimate. We can obtain an accurate estimate by breaking down the area under a graph into sections whose area we can calculate fairly accurately. Generally, the more sections we use, the more accurate our answer will be.

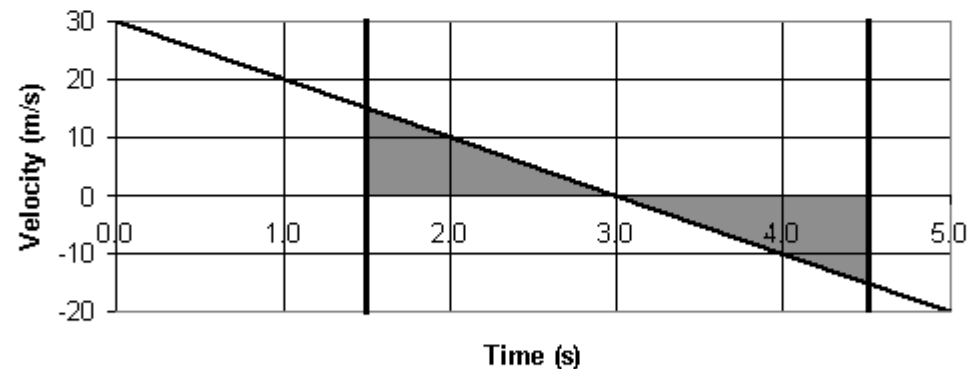
For each of the following exercises, estimate the integral and indicate the variable it is equal to based on the units. Note that areas under the x -axis are considered negative for the purposes of finding integrals.

1.



The integral is approximately 40 m. The variable is displacement.

2.



The integral is near 0 m. The variable is displacement.

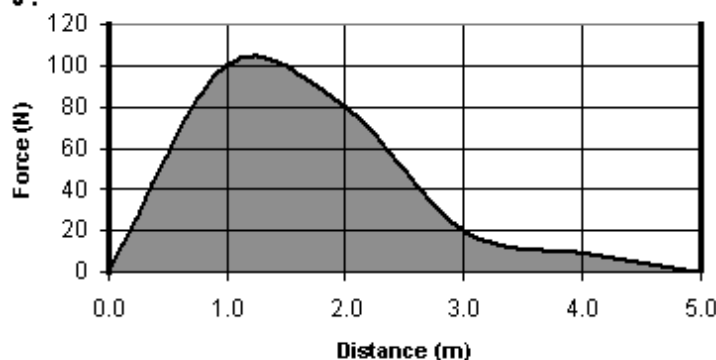
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11a Connecting Math to Physics

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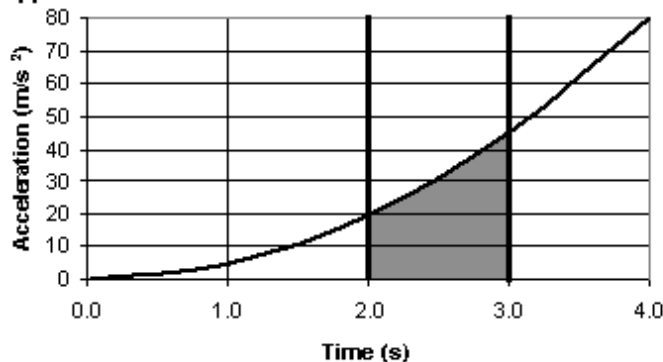
For each of the following exercises, estimate the integral and indicate the variable it is equal to based on the units.

3.



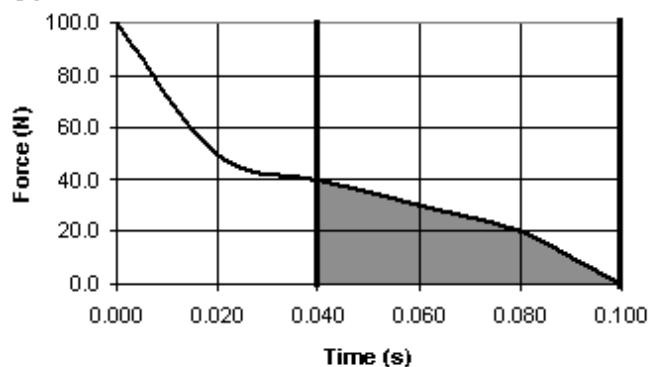
The integral is approximately 200 J.
The variable is work.

4.



The integral is approximately 35 m/s.
The variable is change in velocity.

5.



The integral is approximately 1.4 N·s.
The variable is impulse or change in momentum.