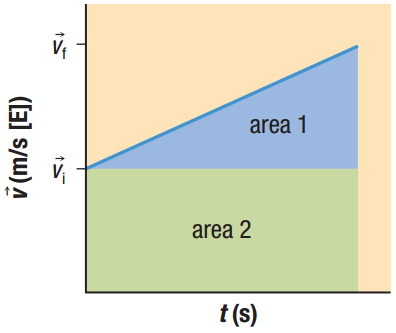
**SPH3U: 1.5 Five Key Equations for Motion with Uniform Acceleration**

1. **A displacement equation**

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| Area under a V-T graph: |  |

Find the area under the graph to the right. This is Equation 1!

Solve the average acceleration equation for *vf*. This is Equation 2!

Substitute *vf* into the first equation. This is Equation 3!

1. **The five key equations of accelerated motion**

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| --- | --- | --- | --- |
|  | **Equation** | **Variables in the equation** | **Variables not in the equation** |
| **Equation 1** |  |  |  |
| **Equation 2** |  |  |  |
| **Equation 3** |  |  |  |
| **Equation 4** |  |  |  |
| **Equation 5** |  |  |  |

A sports car approaches a highway on-ramp at a velocity of 20.0 m/s [E]. If the car accelerates at a rate of 3.2 m/s2 [E] for 5.0 s, what is the displacement of the car?

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A sailboat accelerates uniformly from 6.0 m/s [N] to 8.0 m/s [N] at a rate of 0.50 m/s2 [N]. What distance does the boat travel?

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A dart is thrown at a target that is supported by a wooden backstop. It strikes the backstop with an initial velocity of 350 m/s [E]. The dart comes to rest in 0.0050 s.

1. What is the acceleration of the dart?

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1. How far does the dart penetrate into the backstop?

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**Homework:** page 39: #1-4