Motion practice #1:

A particle is moving along a straight line, with $v(t) = 3t^2 - 10t + 5$ where v is measured in feet per second.

a) Find v'(0) and say what it represents.

b) Find d(t) the particle's position function (displacement from the origin) measured in feet. Explain intuitively why there are many different answers.

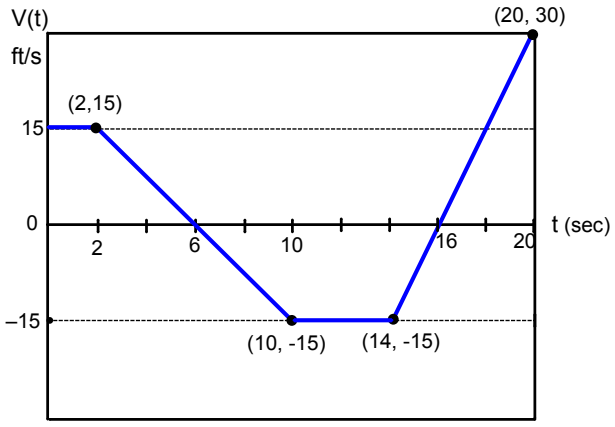
c) What is the name of the process you did to go from v to d?

d) If the particle started at d = 7, revise your answer from part c.

e) What is the particle's velocity the next time it's at a position of 7? Confirm whether the particle is speeding up or slowing down there.

Motion #2: A unicycler is traveling on a straight road. Her velocity v(t) in ft/s is given by the graph.

a) Sketch the graph of acceleration a(t).



b) What distance did the unicycle travel in the first 6 seconds?

c) What happened between t = 6 and t = 16?

d) When was the unicycle speeding up? (it happened twice)

e) Was the unicycle ever stopped?

f) What was her displacement at t = 20 seconds?