1. The graph shows the motion of a car stuck in stop-and-go freeway traffic. (a) If you only knew how far the car had gone during this entire time period, what would you think its velocity was? (b) What is the car's maximum velocity?
2. It is possible to shoot an arrow at a speed as high as 100 m/s. (a) If friction is neglected, how high would an arrow launched at this speed rise if shot straight up? (b) How long would the arrow be in the air?
3. A drag racer starts her car from rest and accelerates at 10.0 m/s² for a distance of 400 m (~1/4 mile) (a) How long did it take the race car to travel this distance? (b) What is the speed of the race car at the end of the run?
4. A truck covers 40.0 m in 8.50 s while smoothly slowing down to a final speed of 2.80 m/s. (a) Find the truck's original speed (b) Find its acceleration.
5. This graph represents the motion of a particle. (a) What is the particle’s instantaneous velocity at \( t=4 \) seconds? (b) What is the particle’s instantaneous velocity at \( t=2 \) seconds?  (c) What is its average velocity between \( t=0 \) and \( t=6 \) seconds?
6. Find the instantaneous velocities of the tennis player of this figure at (a) 2.0 s, (b) 5.0 s, (c) 7.0 s, and (d) 11 s.
7. The following graph describes the motion of a particle. (a) What is the particle’s acceleration between $t=0$ and 30 seconds? (b) Between $t=30$ and $t=40$ seconds? What distance does the particle travel between $t=0$ and 30 seconds? (d) How far away from the starting point is the particle at $t=55$ s?
8. You are looking into a deep well. It is dark, and you cannot see the bottom. You want to find out how deep it is, so you drop a rock in, and you hear a splash 3.0 seconds later. How deep is the well? (The speed of sound in air is 343 m/s.)
9. The photo shows Apollo 16 astronaut John Young jumping on the moon and saluting at the top of his jump. The video footage of the jump shows him staying aloft for 1.45 seconds. Gravity on the moon is 1/6 as strong as on the earth. Compute the height of the jump.