PHYS 1303 – 002

Homework A

1.3

The micrometer $(1 \ \mu m)$ is often called the *micron*. (a) How many microns make up 1.0 km? (b) What fraction of a centimeter equals $1.0 \ \mu m$? (c) How many microns are in $1.0 \ yd$?

1.12

The fastest growing plant on record is a *Hesperoyucca whipplei* that grew 3.7 m in 14 days. What was its growth rate in micrometers per second?

2.2

Compute your average velocity in the following two cases:

(a) You walk $73.2 \ m$ at a speed of $1.22 \ m/s$ and then run $73.2 \ m$ at a speed of $3.05 \ m/s$ along a straight track.
(b) You walk for $1.00 \ min$ at a speed of $1.22 \ m/s$ and then run for $1.00 \ min$ at $3.05 \ m/s$ along a straight track.
(c) Graph x versus t for both cases and indicate how the average velocity is found on the graph.

2.18

The position of a particle moving along an x axis is given by $x = 12t^2 - 2t^3$, where x is in meters and t is in seconds. Determine

(a) the position,
(b) the velocity, and
(c) the acceleration of the particle at $t = 3.0 \ s$.
(d) What is the maximum positive coordinate reached by the particle and
(e) at what time is it reached?
(f) What is the maximum positive velocity reached by the particle and
(g) at what time is it reached?
(h) What is the acceleration of the particle at the instant the particle is not moving (other than at $t = 0$)?
(i) Determine the average velocity of the particle between $t = 0$ and $t = 3 \ s$.