This problem concerns a water wave, i.e., a transverse wave, whose height $h$ is given as a function of its position $x$ (in meters) and time $t$ (in sec) as

$$h(x, t) = (2\text{m})\cos[0.4\pi x - 0.2\pi t] .$$

a) (2 pts) This wave passes through the position where a cork is floating in the water. What is the distance between the highest and lowest height the cork will attain?

b) (2 pts) With what frequency (in cycles per second) will the cork of part a) bob up and down.

c) (2 pts) Give the location of a crest (you may choose any crest) at time 3 seconds.

d) (2 pts) At a certain time, $t_0$, it is seen that a crest is located at $x = 3.3$ meters. Give the location of one other crest at this time $t_0$.

e) (2 pts) At what speed (in m/s) and in what direction does this wave propagate?

f) (2 pts) On the graph below draw a snapshot of the wave at time $t = 0$ in solid line at a time $t = 5$ sec in dashed line. ($\lambda$ is the wavelength.)

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  h(m)
  +4 |
  +2 |
  +0 |
  -2 |
  -4 |
    \lambda/2 \lambda x
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