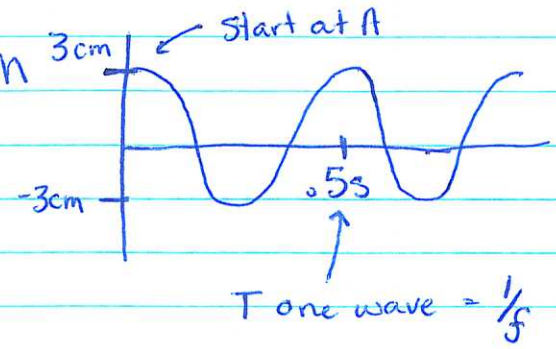
SHM #2

p 727 MC 5, 6, 7, 8
p 728 Problems 13, 16, 17

p727 – Multiple Choice (8)

5) ~~ball bearing in bowl. Ball rolls down & up~~
Cart SHM $f = 2.0\,Hz$ $A = 3.0\,cm$
@ $t = 0$ $x = +A$
position vs time graph



6) SHM when is speed zero?

(4) • At max displacement from equilibrium

7) SHM When is acceleration zero?

• At equilibrium position

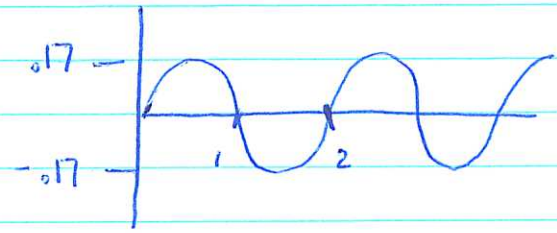
8) SHM Where is acceleration max?

• At max displacement from equilibrium

p728 – Problems

13) $x = (.17m)\sin(\pi\ s^{-1})t$

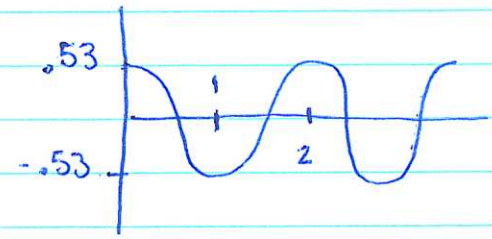
a) position time graph



b) velocity time graph

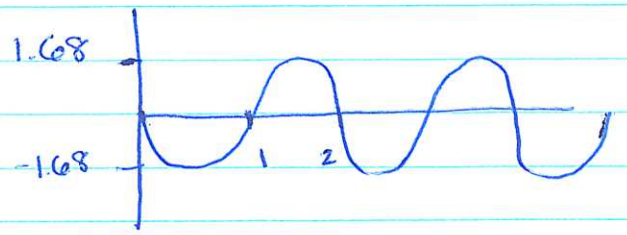
$v = (.17)(\pi)\cos(\pi s^{-1})t$
$= .53\ m/s\ \cos(\pi\ s^{-1})t$

(2)

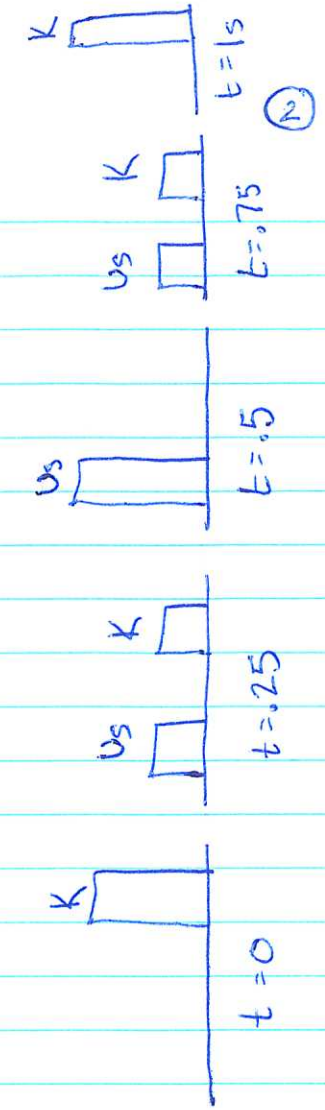


c) acceleration time graph

$a = -(.53)(\pi)\sin(\pi\ s^{-1})t$
$= -1.68\ m/s^2\ \sin(\pi\ s^{-1})t$

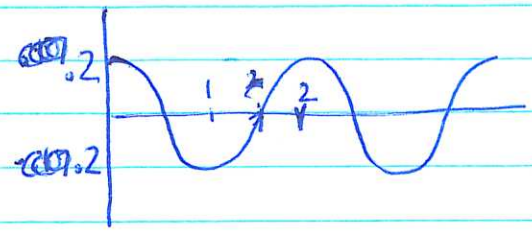


d) Energy barchart



16) $x = .2m \cos(\pi s^{-1})t$

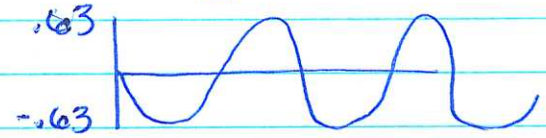
a) position vs time graph



b) Write velocity vs time (use $t\pi$)

$$v = -.2\pi \sin(\pi)t$$

c) velocity time graph

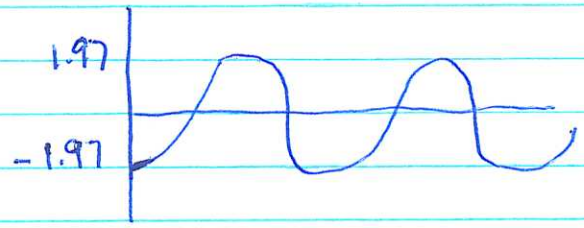


(2)
(1)

d) Write acceleration vs time

$$a = -(.2\pi)\pi \cos(\pi)t$$
$$= -.2\pi^2 \cos \pi t$$

e) accel vs time graph



17) $V = -(.6\,m/s)\cos(2\pi)t$

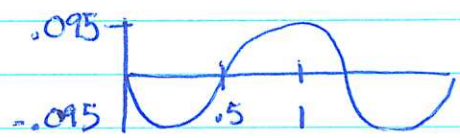
a) find position vs time expression (in terms t, π)

$x=0$ $x=0$ $x(t) = \frac{-.6}{2\pi}\sin(2\pi)t$

$= -.095\sin(2\pi)t$

b) Position vs time graph

(1)



c) energy bar chart