Good afternoon: Warm up

Suppose a particle's motion is modeled by the differentiable equation $f(t) = \frac{1}{12}t^4 - \frac{5}{6}t^3 + 3t^2 + 4t + 3$ where t is measured in seconds and f is measured in meters. Find the time(s) when the acceleration is zero.

pos. function

$\frac{d}{dt}$ vel.

$\frac{d}{dt}$ accel.

$v(t) = f'(t) = \frac{1}{3}t^3 - \frac{5}{2}t^2 + 6t + 4$

$a(t) = f''(t) = t^2 - 5t + 6 = 0$

$(t-3)(t-2) = 0$

$t = 3, t = 2$

AP Packet

Be sure your name is on it
Pass it to the person at your table closest to the door

Suppose a moving object's position s, in feet, for any time t in seconds is modeled by $s(t) = -3t^2+12t+4$.

1. When is the object at rest?

$\frac{ds}{dt} = v(t) = -6t+12 = 0$; $\frac{dv}{dt} = -6$

$v(t) = 0$

2. Is the object speeding up or slowing down at t=3?

$v(3) = -6$ ft/sec ; $a(3) = -6$ ft/sec^2

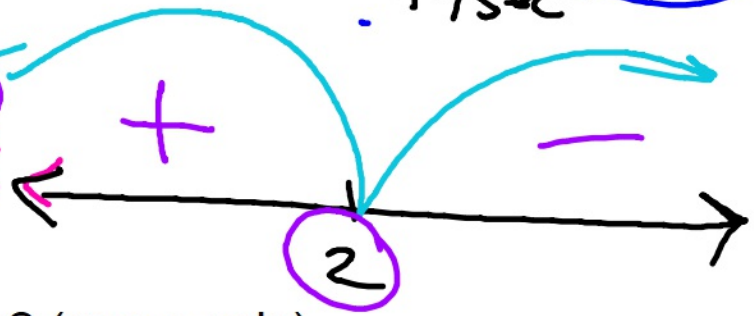
v, a have same/diff signs?

same: speed up
diff: slow down

3. When does the object change direction?

Sign change in vel.

$v(t) = 0 \rightarrow @t = 2$



4. When the object hits the ground, what is its velocity? (use a calc)

→ Solve $s(t) = 0$. Plug the time you get for that into $v(t)$.

Whiteboard Math :)

Each group gets a handout problem

- Go to a whiteboard spot
- One pen per group (makes for good discussion :))
- Work it out!

Next Assessment: Thursday

HW:
motion handout: evens

Monday's hw and cw:
derive, derivado handout: all