

## Phys11 V-T Pursuit Problem : W.S.-130

At  $t = 0.0$  s a zebra runs past a lion. The zebra's velocity (+X direction) is a constant 15 m/s. At  $t = 0.0$  s a lion (initially at rest) starts to chase the zebra. The lion's velocity increases with an acceleration of  $+3.0$  m/s<sup>2</sup> for 6.0 s. It then moves at a constant velocity. Sketch the two graphs. (vertical axis is velocity (in +X direction) in m/s, horizontal axis is time in s).

- 1) Give the equations of motion during the first 6.0 seconds for : a) the zebra, b) the lion.
- 2) At what time are both moving at the same velocity?
- 3) At what time and displacement does the lion catch the zebra? (assume the lion is at  $d = 0.0$  m to start),(hint : the area under a V-T graph equals the displacement)

