2)

Ball dropped from 100 m cliff.

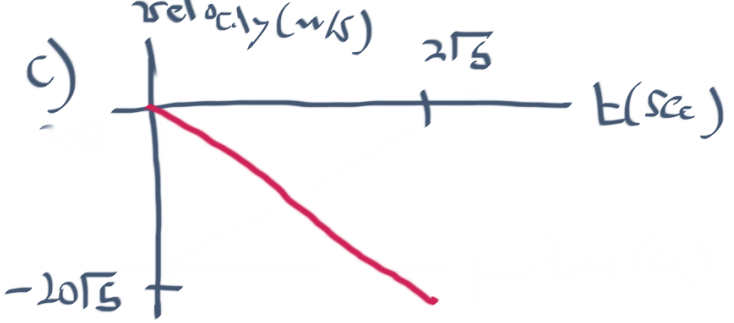
a) It takes how much time to strike the ground?

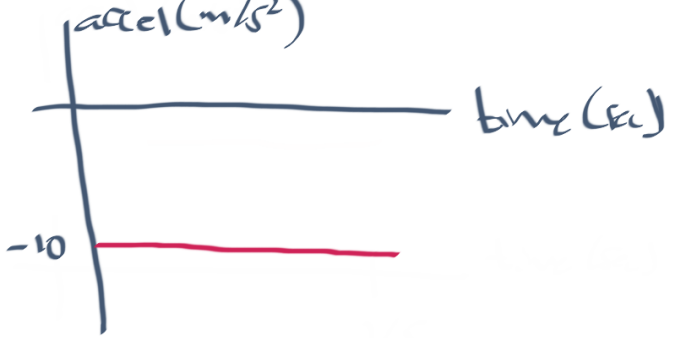
$d = \frac{1}{2}at^2 \Rightarrow \sqrt{2d/a} = t = \sqrt{\frac{200m}{10 m/s^2}} = \sqrt{20}$ sec

$t = \boxed{2\sqrt{5}\text{ sec}}$

b) Its speed will be $v = at = (10 m/s^2)(2\sqrt{5})\text{sec} = \boxed{20\sqrt{5}\ m/s}$

c)





$\text{height} = 100m - \frac{1}{2}(10 m/s^2)t^2$

d) If it bounces, it will take $2\sqrt{5}$ seconds to get back up 100m. Its speed will be 0 m/s at the top. Its acceleration is $10 m/s^2$ downward