GP2 Written assignment # 5

due 10/2/2015 5pm

A pair of wires carry a current $I = 2.4$ A to and from a solenoid. The solenoid contains 600 coils of wire wrapped in a cylinder 15 cm long and 1 cm in diameter.

A) What is the magnitude and direction of the magnetic field at point A $d_1 = 5$ mm from the near wire and $d_2 = 7$ mm from the far wire?

B) What is the magnitude and direction of the magnetic field at point B inside the solenoid?

C) A proton is fired into the solenoid with a velocity perpendicular to the solenoid axis. What is the fastest the proton can be traveling so that its radius of curvature is smaller than the radius of the solenoid?

D) When viewed from above ($\downarrow$), will the proton move in a clockwise or counterclockwise direction?