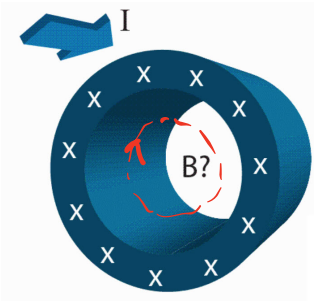
PHYSICS 301 Tutorial #7 – quiz Name: Solns
Nov. 7, 2024 Student Number:

(1pt) **1.** The figure below shows a hollow conducting pipe carrying a current I directed into the page. What is the direction of the magnetic field inside the hollow bore of the pipe?

(a) clockwise
(b) counterclockwise
(c) radially inwards towards the central axis of the pipe
(d) radially outwards away from the central axis of the pipe
(e) $B = 0$



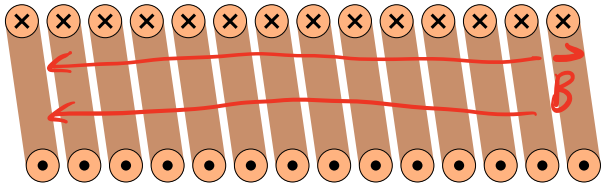
Place an amperian loop inside bore. Here, $I_{encl} = 0$. (no current through loop)

$\therefore \oint \vec{B} \cdot d\vec{l} = 0$

$\Rightarrow B = 0$

(1pt) **2.** The figure below shows the cross-section of a solenoid. The solenoid carries current I in its windings. The current is directed into the page at the top of the solenoid cross-section and it is out of the page at the bottom of the cross-section. What is the direction of the magnetic field inside the bore of the solenoid?

(a) to the left
(b) to the right
(c) into the page
(d) out of the page
(e) $B = 0$ inside the solenoid bore



By RHR (curl fingers of right hand in dir'n of I, thumb gives dir'n of $\vec{B}$)

$\vec{B}$ is the the left

2 pts