At first, I would like to thank you for the letter.

It is the citation from your letter

1. Integration gives

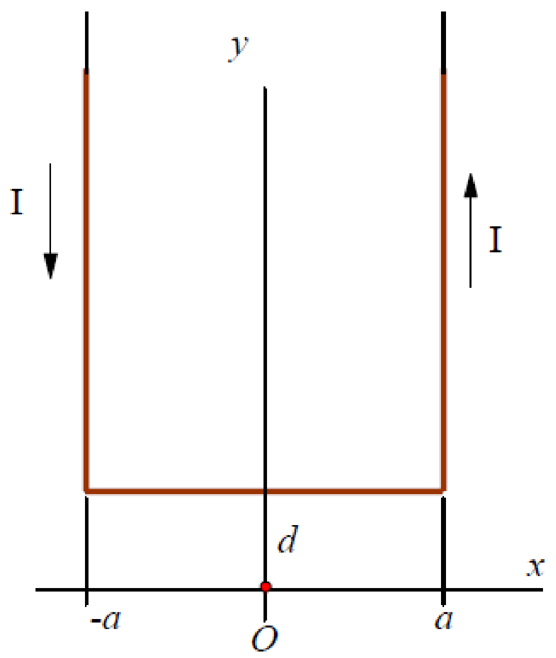
$$B = \frac{\mu_0 I}{2\pi}\left(1 - \frac{a+d}{\sqrt{a^2+d^2}}\right),$$

the positive direction is by default downwards (away from the picture).

I do not believe that this is right answer. In limit, $a \to \infty$ I must receive magnetic field of a long wire which carries an electric current: $B \propto \frac{1}{d}$. But your expression give for me very strange answer: $\lim\limits_{a\to\infty} B = \lim\limits_{a\to\infty}\left(1 - \frac{a+d}{\sqrt{a^2+d^2}}\right) = 0$.

problem specification

1) Determine the magnetic field (in terms of I, a, and d) at the origin (O) due to the current loop in figure below?



Hint: the Biot-Savart law: $B(r) = \frac{\mu_0}{4\pi}\int\limits_C \frac{I\cdot\left[d\vec{l}\times\vec{r}'\right]}{\left|\vec{r}'\right|^3}$, where $\vec{r}' = \vec{r} - \vec{l}$.

I'm sorry, the answer was wrong..

The corrected version looks like

$$B = \frac{\mu_0 i}{2\pi} \left(\frac{1}{a} - \frac{\sqrt{a^2 + d^2}}{ad} \right),$$

it fits the asymptotic case $a \to \infty$:

$$B\left(a \to \infty\right) = -\frac{\mu_0 i}{2\pi d}.$$