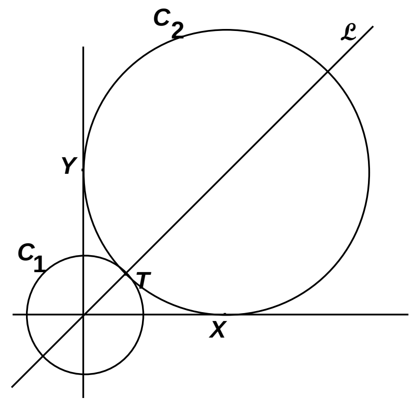
Addendum:

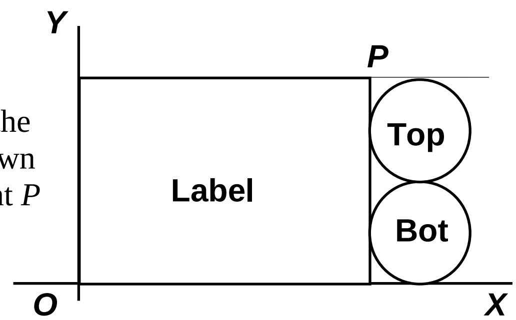


The original contest had two appeals in round 3

B) The original question was

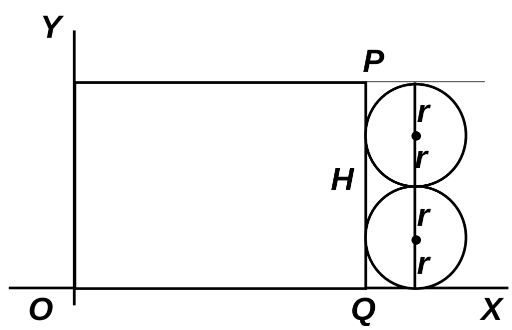
Let circle $C_1 = \{(x,y)\,|\,x^2+y^2=36\}$ and line $\mathscr{L} = \{(x,y)\,|\,y=x\}$.
Circle C_2 has its center on $\mathscr{L}$ and is tangent to the *x*-axis at $X(a, 0)$, the *y*-axis at $Y(0, b)$ and circle C_1 at point *T*.
Compute the value of *a*.

In the second line the phrase <u>outside of C_1</u> was omitted and since there is a circle inside of C_1 which satisfies the verbally stated conditions of the problem, $6\left(\sqrt{2}-1\right)$ was also accepted.



C) The original question was

When removed, the label on a cylindrical can is a rectangle. Suppose the height (*H*) of the can is 4 times the radius (*r*) of the base. The label is placed in quadrant 1 of the *xy*-plane as shown in the diagram at the right. The distance from point *O* to point *P* can be expressed in terms of *H* and *r* in simplest form as
$A\sqrt{B}\dfrac{H^2}{r}$, where *A* and *B* are positive constants and *B* is expressed in terms of π. Compute the ordered pair (*A*, *B*).



Since it was perfectly logical for a student to proceed
$OP^2 = H^2 + OQ^2 = H^2 + (2\pi r)^2$

Substituting for *r*, $H^2 + H^2\cdot\dfrac{\pi^2}{4} = H^2\left(1+\dfrac{\pi^2}{4}\right)$

$OP = H\sqrt{1+\dfrac{\pi^2}{4}}$ and $B = 1+\dfrac{\pi^2}{4}$

Now $\dfrac{AH^2}{r} = H \Rightarrow AH^2 = Hr = \dfrac{H^2}{4} \Rightarrow A = \dfrac{1}{4}$

An alternate answer of $\left(\dfrac{1}{4}, \dfrac{\pi^2}{4}+1\right)$ was also accepted.