3) $AB = \sqrt{4.69\overline{4}}$

$= \sqrt{469.\overline{4} \times 10^{-2}}$

$= \sqrt{\left(469 + \frac{4}{9}\right) \times 10^{-2}}$

$= \sqrt{\left(\frac{4221 + 4}{9}\right) \times 10^{-2}}$

$= \sqrt{\frac{4225}{9} \times 10^{-2}}$

$= \sqrt{\frac{4225}{3^2 \times 10^2}} = \frac{\sqrt{65^2}}{30}$

$= \frac{65}{30} = \frac{13}{6}$ cm ✓

$IB = \frac{3}{2}$ cm

[AB) is tangent to (δ) at B (given) so

So, $A\hat{B}I = 90°$ (~~inscribed~~ angle formed between radius & tangent)

So, $\triangle ABI$ is right at B,

then, $AI^2 = AB^2 + BI^2$ (pythagorean theorem) ✓

$AI^2 = \left(\frac{13}{6}\right)^2 + \left(\frac{3}{2}\right)^2$

$AI^2 = \frac{169}{36} + \frac{9}{4}$

$AI^2 = \frac{169 + 81}{36}$

$AI^2 = \frac{250}{36}$

$AI = \sqrt{\frac{5^2 \times 10}{6^2}} = \frac{5\sqrt{10}}{6}$ cm ✓ (True) ✓