3.66
29

$2 \leq |z-10i| = |x+iy-10i| = \sqrt{(x-0)^2+(y-10)^2} \longrightarrow 4 \leq (x-0)^2+(y-10)^2$

$2 \geq \mathrm{Im}(z^2) = \mathrm{Im}(x^2+2xyi-y^2) \longrightarrow 2 \geq 2xy \longrightarrow \frac{1}{x} \geq y$

$0 > |z|^2 - 5\,\mathrm{Im}(2z) = x^2+y^2-10y \longrightarrow x^2+(y-5)^2 < 25$