Also from (*) it follows:

\[
\left[ R + \frac{1}{\omega L - \frac{1}{2C}} \right] \frac{I_0}{V_0} = \cos \phi + i \sin \phi = 0.
\]

\[
\tan \phi = \frac{\omega L - \frac{1}{2C}}{R}.
\]

(b) The circuit is at resonance, when a maximum of the amplitude appears. From our formula for \( I(t) \) we see, that this takes place when the denominator has a minimum at

\[
\left( \frac{\omega L - \frac{1}{2C}}{R} \right) = 0 \implies \Omega^2 = \frac{1}{LC} \implies \Omega_{res} = \frac{1}{\sqrt{LC}}.
\]