



The “absolute pressure” at the inlet to the pump will be:

Tank air space pressure: P_t (the absolute value)

Minus the effective head of the fluid = $L_1 \times \rho \times g$

Minus the pressure drop in the whole suction pipe ($L_1 + L_2$). This pressure drop will be a function of inside diameter, flow rate, density and viscosity etc. and all the other usual complications: allowances for bends, elbows, surface roughness (if not laminar flow) and so on.

To be scrupulously accurate you could include the entry losses (depends on the shape of the pipe inlet). You might also want to include acceleration losses if the pump is variable speed or variable displacement.

If you have a suction strainer remember to allow for the pressure drop across the element.

If you have a spring loaded foot valve then you have to allow for the pressure drop across that as well.