A liquid film of thickness $h < 100$ nm is subject to additional intermolecular forces, which are collectively called disjoining pressure $\Pi$. Since $\Pi$ dominates at small film thicknesses, it determines the stability and wettability of thin films. Current theory derived for uniform films gives $\Pi = \Pi(h)$. This solution has been applied recently to non-uniform films and becomes unbounded near a contact line as $h \to 0$. Consequently, many different effects have been considered to eliminate or circumvent this singularity. We present a mean-field theory of $\Pi$ that depends on the slope $h_x$ as well as the height $h$ of the film. When this theory is implemented for Lennard-Jones liquid films, the new $\Pi = \Pi(h, h_x)$ is bounded near a contact line as $h \to 0$. Thus, the singularity in $\Pi(h)$ is artificial because it results from extending a theory beyond its range of validity. We also show that the new $\Pi$ can capture all three regimes of drop behavior (complete wetting, partial wetting, and pseudo partial wetting) without altering the signs of the long and short-range interactions. We find that a drop with a precursor film is linearly stable.