HW 3-29

(1) $\lim_{x \to 1} \dfrac{1 - 2\sqrt{x} + x}{2 - 3\sqrt{x} + x^2} = ?$

(2) $\lim_{x \to 1} \dfrac{1 - 2\sqrt{x} + x}{3 - 3\sqrt{x} + \sqrt{x^3}} = ?$

(3) If $\varphi : \mathbb{R} \to \mathbb{R}$ is differentiable and $\varphi'(x) = 0$ for all $x \in \mathbb{R}$, prove that φ is constant.