Limits of Functions Involving Radicals

Ex. 1 Find $\lim_{x\to\ 4} \dfrac{t^2-16}{2-\sqrt{t}}$

Ex. 2 Does $\lim_{x\to\ 0+} \dfrac{x}{\sqrt{2x}}$ exist?

Ex. 3 Find $\lim_{x\to\ 0} \dfrac{\sqrt{4+x}-2}{x}$.

Ex. 4 Consider $\lim_{x \to 0} \dfrac{(x+8)^{\frac{1}{3}} - 2}{x}$

Ex. Evaluate $\lim_{x \to 2} \dfrac{\sqrt{6-x} - 2}{\sqrt{3-x} - 1}$.

Review Work: Evaluate the following limits:

$\lim_{x \to 81} \frac{\sqrt{x}-9}{x-81}$

$\lim_{x \to 1} \frac{\sqrt{7-6x}-1}{x-1}$

$\lim_{x \to 0} \frac{2x}{\sqrt{100+x}-\sqrt{100-x}}$

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

$\lim_{x \to 1} \frac{x^2-\sqrt{x}}{\sqrt{x}-1}$

Evaluate $\lim_{x \to k+1} \frac{x^4-1}{x^3-1}$ if $\lim_{x \to 0} \frac{\sqrt{7+x^3}-\sqrt{7-x^3}}{x} = k$