Present neatly. Justify for full credit. No Calculators.

Name __KEY/SHUBLEKA__   Score _____   ~10 minutes

1.
Find the limit or explain why it does not exist.

(a) $\lim\limits_{x \to 4^+} \dfrac{2-x}{(x-4)(x+2)}$ (b) $\lim\limits_{x \to 4^-} \dfrac{2-x}{(x-4)(x+2)}$ (c) $\lim\limits_{x \to 4} \dfrac{2-x}{(x-4)(x+2)}$

a) $\lim\limits_{x \to 4^+} \dfrac{(2-x)^{\to -2}}{(x-4)(x+2)} \approx \dfrac{-2}{0^+} = -\infty$

$\underbrace{(x-4)}_{0^+} \quad \underbrace{(x+2)}_{\searrow 6}$

b) $\lim\limits_{x \to 4^-} \dfrac{(2-x)^{\to -2}}{(x-4)(x+2)} \approx \dfrac{-2}{0^-} = \infty$

$\underbrace{(x-4)}_{0^-} \quad \underbrace{(x+2)}_{\searrow 6}$

c) The overall limit as x approaches 4 does not exist, since the one-sided limits do not coincide.