Worksheet - Algebraic Approach to Limits

1. Determine the limits for each of the following:

(a) $\lim\limits_{x\to 9}\dfrac{9-x}{3-\sqrt{x}}$

(b) $\lim\limits_{x\to -2}\dfrac{x^3+8}{x+2}$

(c) $\lim\limits_{x\to 2}\dfrac{x^4-16}{x-2}$

(d) $\lim\limits_{x\to 9}\dfrac{x^2-81}{3x-27}$

(e) $\lim\limits_{x\to -3}\dfrac{x+3}{x^2-x-12}$

(f) $\lim\limits_{x\to -8}\dfrac{x+8}{\sqrt[3]{x}+2}$

(g) $\lim\limits_{x\to -2}\dfrac{x^3-x^2-x+10}{x^2+3x+2}$

(h) $\lim\limits_{x\to 25}\dfrac{x-25}{\sqrt{x}-5}$

(i) $\lim\limits_{x\to -27}\dfrac{x+27}{3+\sqrt[3]{x}}$

(j) $\lim\limits_{h\to 0}\dfrac{(h-5)^2-25}{h}$

(k) $\lim\limits_{a\to 1}\dfrac{a^3-a}{a^2-1}$

(l) $\lim\limits_{x\to -2}\dfrac{x+2}{x^2-x-6}$

(m) $\lim\limits_{a\to 9}\dfrac{a-9}{3-\sqrt{a}}$

(n) $\lim\limits_{a\to 0}\dfrac{\sqrt{2-a}-\sqrt{2}}{a}$

(o) $\lim\limits_{x\to 2}\dfrac{\frac{1}{x}-\frac{1}{2}}{x-2}$

(p) $\lim\limits_{a\to 0}\dfrac{a}{\sqrt{1+3a}-1}$