# 1.5 Evaluating Limits

Don't forget: If you "***plug it in and see what happens***", and get "$\frac{0}{0}$", then **MORE WORK** needs to be done.

Note: you may find the following helpful: $a^3 \pm b^3 = (a \pm b)(a^2 \mp ab + b^2)$

Evaluate the following Limits:

a) $\lim\limits_{x\to -2}(3x^2 - 5x + 1)$ b) $\lim\limits_{x\to 2}\left(\sqrt{2x-1}\right)$ c) $\lim\limits_{t\to 1}\left(\frac{3t}{t-1}\right)$

d) $\lim\limits_{x\to 2}\left(\sqrt{x+\sqrt{x+7}}\right)$ e) $\lim\limits_{x\to -2}\left(\sqrt{\frac{4x-1}{x+1}}\right)$ f) $\lim\limits_{n\to -2}\left(\frac{3}{2-n}\right)^n$

g) $\lim\limits_{x\to 3}\left(\frac{x^2-9}{x-3}\right)$ h) $\lim\limits_{t\to 3}\left(\frac{\sqrt{x+1}-2}{x-3}\right)$ i) $\lim\limits_{x\to -2}\left(\frac{x^3+8}{x+2}\right)$

j) $\lim\limits_{m\to -2}\left(\frac{2m^2+3m-2}{3m^2-12}\right)$ k) $\lim\limits_{x\to -3}\left(\frac{3-\sqrt{12+x}}{x+3}\right)$ l) $\lim\limits_{x\to 2}\left(\frac{\sqrt{x+3}-\sqrt{7-x}}{x-2}\right)$

For the last three, use a change of variable to evaluate:

m) $\lim\limits_{x\to 8}\left(\frac{x^{\frac{1}{3}}-2}{x-8}\right)$ n) $\lim\limits_{x\to 1}\left(\frac{1-x}{x^{\frac{1}{3}}-1}\right)$ o) $\lim\limits_{x\to 0}\left(\frac{(x+1)^{\frac{1}{3}}-1}{x}\right)$

Answers to selected problems:

b) $\sqrt{3}$ d) $\sqrt{5}$ f) $\frac{16}{9}$ h) $\frac{1}{4}$ i) 12 k) $-\frac{1}{6}$ m) $\frac{1}{12}$ o) $\frac{1}{3}$