Note Title 17/09/2018

$$f(x) = \frac{2x+1}{x-1} = \frac{\frac{2x+1}{x}}{\frac{x-1}{x}}$$

$$= \frac{\frac{2\cancel{x}}{x} + \frac{1}{x}}{\frac{x}{x} - \frac{1}{x}} = \frac{2 + \frac{1}{x}}{1 - \frac{1}{x}}$$

if x is large then $\frac{1}{x} \approx 0$

so $\quad f(x) \approx \dfrac{2+0}{1-0} = 2$

$$\lim_{x\to\infty} \frac{1-3x}{2x+1} = \lim_{x\to\infty} \frac{\frac{1-3x}{x}}{\frac{2x+1}{x}}$$

$$= \lim_{x\to\infty} \frac{\frac{1}{x}-3}{2+\frac{1}{x}} = \frac{0-3}{2+0}$$

$$= -\frac{3}{2}$$

$$\lim_{x \to \infty} \frac{x^2 + x - 2}{3 - 2x^2} = \lim_{x \to \infty} \frac{\frac{x^2}{x^2} + \frac{x}{x^2} - \frac{2}{x^2}}{\frac{3}{x^2} - \frac{2x^2}{x^2}}$$

$$= \lim_{x \to \infty} \frac{1 - \frac{1}{x} - \frac{2}{x^2}}{\frac{3}{x^2} - 2}$$

$$= \frac{1 - 0 - 0}{0 - 2} = -\frac{1}{2}$$