DIRECT SUBSTITUTION

1. $f(x) = x|x-3|$

a) $\lim_{x\to 3} f(x) = 0$

b) $\lim_{x\to -1} f(x) = -4$

2. $\lim_{x\to -3} (x^2 - 3x)$

$= (-3)^2 - 3(-3)$

$= 9 + 9$

$= 18$

3. $\lim_{x\to -1} \frac{4x-1}{3-x}$

$= \frac{4(-1)-1}{3-(-1)}$

$= \frac{-4-1}{3+1}$

$= \frac{-5}{4}$

4. $\lim_{x\to 4} \left(\frac{\frac{1}{x+3} - \frac{1}{3}}{x} \right)$

$= \frac{\frac{1}{4+3} - \frac{1}{3}}{4}$

$= \frac{\frac{1}{7} - \frac{1}{3}}{4}$

$= \frac{21\left(\frac{1}{7}\right) - 21\left(\frac{1}{3}\right)}{21(4)}$

$= \frac{3-7}{84}$

$= \frac{-4}{84}$

$= \frac{-1}{21}$

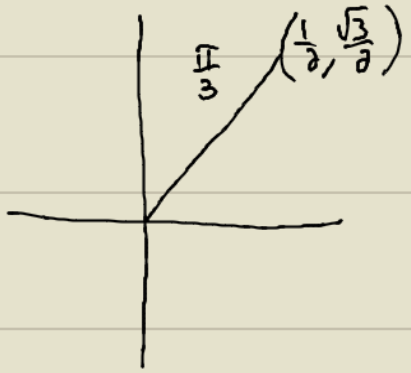
5. $\lim_{x\to \frac{\pi}{3}} \tan x$

$= \tan \frac{\pi}{3}$ "$\frac{y}{x}$"

$= \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}}$

$= \frac{\sqrt{3}}{1}$

$= \sqrt{3}$



6. $\lim_{x\to 9} \left(\csc \frac{\pi x}{6} \right)$

$= \csc \frac{\pi(9)}{6}$

$= \csc \frac{3\pi}{2}$ "$\frac{1}{y}$"

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

$= -1$