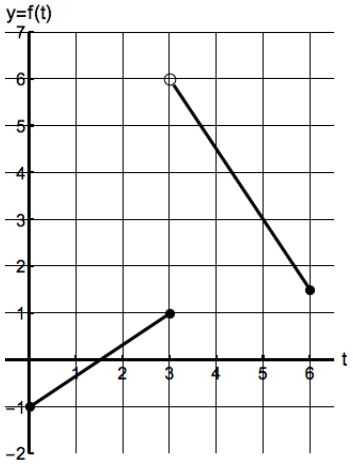
4. [13 points]

a. [7 points] The graph of the function $f(t)$ is shown below



i) Find a formula for $f(t)$.

Solution:

$$f(t) = \begin{cases} \frac{2}{3}t - 1 & 0 \le t \le 3 \\ -\frac{3}{2}(t-5) + 3 = -1.5t + 10.5 & 3 < t \le 6 \end{cases}$$

ii) Does the function $f(t)$ have an inverse function for $0 \le t \le 6$? Circle your answer.

Solution:

$\boxed{YES}$ NO It is not possible to be determined.

b. [6 points] Find the value of the following limits.

Solution:

i) $\lim_{x\to\infty} \frac{100\ln(100x)}{x^{0.2}} = 0$

ii) $\lim_{x\to\infty} \frac{x^2(5-x^3)}{3+2x^5+6x^2} = -0.5$

iii) $\lim_{x\to -\infty} \frac{5+10^x}{3^x+7} = \frac{5}{7}$