4. [13 points]

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

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

Solution:

\[
\begin{cases}
  \frac{2}{3}t - 1 & 0 \leq t \leq 3 \\
  -\frac{3}{2}(t - 5) + 3 = -1.5t + 10.5 & 3 < t \leq 6
\end{cases}
\]

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

Solution: 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) \[\lim_{x \to -\infty} \frac{5 + 10^x}{3^x + 7} = \frac{5}{7}\]