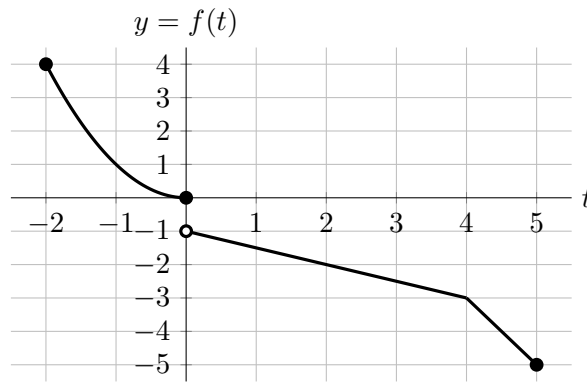$$y = f(t)$$

2. [16 points]

Shown to the right is the graph of
a function $f(t)$.

Note that:

- $f(t) = t^2$ on $[-2, 0]$,

- $f(t)$ is linear on the
  intervals $(0,4)$ and $(4,5)$.

a. Evaluate each of the following quantities **exactly**, or write DNE if the value does not exist.
You do not need to show work, but limited partial credit may be awarded for work shown.

i. [2 points] Find $(f^{-1})'(-2)$.

Answer: $(f^{-1})'(-2) = $ _____

ii. [2 points] Let $g(t) = \sin(t)f(t)$. Find $g'(4)$.

Answer: $g'(4) = $ _____

iii. [4 points] Let $h(t) = \dfrac{f(2t+2)}{2^t}$. Find $h'(0)$.

Answer: $h'(0) = $ _____

iv. [4 points] Let $j(t) = \ln(-f'(t))$. Find $j'(-1)$.

Answer: $j'(-1) = $ _____

b. [2 points] On which of the following interval(s) does $f(t)$ satisfy the hypotheses of the Mean
Value Theorem? Circle all correct choices.

$[-2, 5]$ $\qquad\qquad$ $[0,3]$ $\qquad\qquad$ $[3,5]$ $\qquad\qquad$ NONE OF THESE

c. [2 points] On which of the following interval(s) does $f(t)$ satisfy the conclusion of the Mean
Value Theorem? Circle all correct choices.

$[-2, 5]$ $\qquad\qquad$ $[0, 3]$ $\qquad\qquad$ $[3, 5]$ $\qquad\qquad$ NONE OF THESE