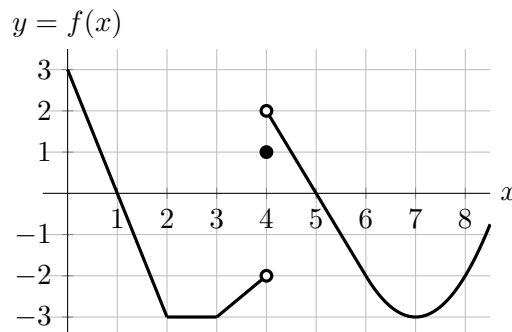


3. [14 points] Suppose $f(x)$ is an even function. A piece of the graph of $f(x)$ is given below.

Note that $f(x)$ is piecewise linear for $0 \leq x \leq 6$.

Find the following quantities. If any of their values do not exist, write DNE. If there is not enough information to answer, write NI.



- a. [1 point] Find $\lim_{p \rightarrow 4^+} f(p)$.

Answer: _____

- b. [2 points] Find $\lim_{m \rightarrow 0} \frac{f(1+m) - f(1)}{m}$.

Answer: _____

- c. [3 points] Let $g(x) = \frac{1}{\sqrt{4 + f(2x)}}$. Find $g'(2.5)$.

Answer: _____

- d. [3 points] Recall that $f(x)$ is even. Find $\int_{-3}^1 (5f(t) - 3) dt$.

Answer: _____

- e. [3 points] Let $j(x)$ be an antiderivative of $f(x)$ with $j(5) = 3$. Suppose that $p(x)$ is the quadratic approximation of $j(x)$ near $x = 5$. Find a formula for $p(x)$.

Answer: $p(x) =$ _____

- f. [2 points] Find all the values of a with $-3 \leq a \leq 3$ such that $\int_{-2}^a f(x) dx = 0$.

Answer: $a =$ _____