**3.** [12 points]  Oakley gets exercise every day in one of two ways: either by walking outside, or following instructions from an exercise app.

- $f(d)$ is the amount of time, in minutes, it takes Oakley to walk $d$ miles.
- $f(d)$ is invertible.
- $W(t)$ is Oakley's heart rate, in beats per minutes, $t$ minutes after they start walking.
- $A(t)$ is Oakley's heart rate, in beats per minutes, $t$ minutes after they start using the exercise app.

**a.** [8 points] For each of the following, give a practical interpretation of the given expression, or explain why the expression does not make sense in the context of the problem.

  **i.** $f^{-1}(5)$

  **ii.** $W(f(1.5)) = 95$

  **iii.** $W(40) < A(20)$

**b.** [4 points] Find an expression for Oakley's average speed, in miles per **hour**, when Oakley has walked a total of $d$ miles. Your answer may involve $f, W$, and/or $A$.

**4.** [10 points]  The plot below shows a graph of $y = B(t)$, the height in feet of a buoy floating in the ocean $t$ minutes after **6 am.**
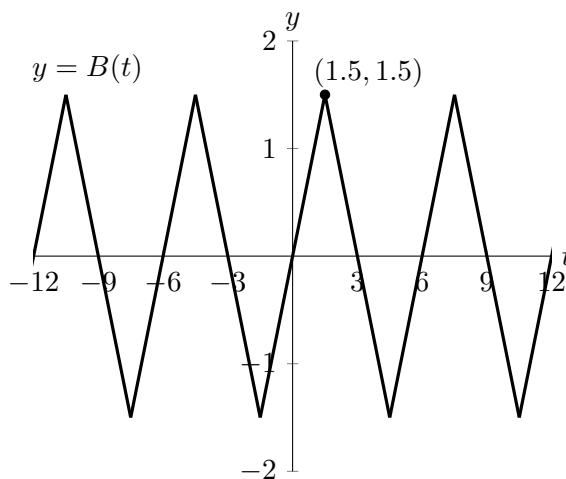


Use the graph to answer the following questions:

**a.** [2 points] What is the period of $B(t)$? Include units.

**b.** [3 points] For each of the following transformations, write down if the the function is even, odd, or neither.

  i. $B(t - 7.5) + 1$.

  ii. $-B(t) + 2.25$.

  iii. $B(-t)$.

**c.** [5 points] Let $G(h)$ be the function telling you the height in **inches**, at time $h$ **hours** after **8 am**. Write a formula for $G(h)$ in terms of $B$. (Recall that there are 12 inches in one foot.)