10. [6 points] The graph of the function \( k(x) \) is shown below.

\[ y = k(x) \]

\[ x \]

\[ y \]

\[ -3 \]

\[ -2 \]

\[ -1 \]

\[ 1 \]

\[ 2 \]

\[ 3 \]

\[ 4 \]

\[ 5 \]

\[ -3 \]

\[ -2 \]

\[ -1 \]

\[ 1 \]

\[ 2 \]

\[ 3 \]

\[ 4 \]

\[ 5 \]

\[ a. \] [3 points] The function \( h(x) \) is obtained from \( k(x) \) by one or more transformations and its graph is shown below. Note that the scale on the axes is not the same.

Write a formula for \( h(x) \) in terms of the function \( k \).

\[ \text{Solution: Answer: } h(x) = k \left( -\frac{1}{3} x \right) - 1 \]

\[ \]

\[ b. \] [3 points] The function \( q(x) \) is obtained from \( k(x) \) by one or more transformations and its graph is shown below.

Which one of the following choices is the correct formula for \( q(x) \)?

\[ \text{Solution:} \]

(A) \( q(x) = 2k(-2(x + 3)) - 3 \)

(B) \( q(x) = 2k(-\frac{1}{2} x + 1) - 3 \)

(C) \( q(x) = 2k(\frac{1}{2}(x + 3)) - 6 \)

(D) \( q(x) = -2k(2(x + 4)) - 2 \)

(E) \( q(x) = -2k(2(x + 3)) + 1 \)

(F) \( q(x) = -2k(2x + 3) + 1 \)

(G) \( q(x) = -2k(-\frac{1}{2}(x + 4)) - 2 \)

(H) \( q(x) = -2k(\frac{1}{2}(x - 3)) + 1 \)

(I) NONE OF THESE