

10. [4 points] Find all real numbers B and positive integers k such that the rational function

$$H(x) = \frac{9 + x^k}{16 - Bx^3}$$

satisfies the following two conditions:

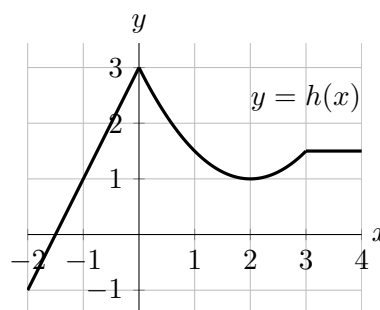
- $H(x)$ has a vertical asymptote at $x = 2$
- $\lim_{x \rightarrow \infty} H(x)$ exists.

If no such values exist, write NONE.

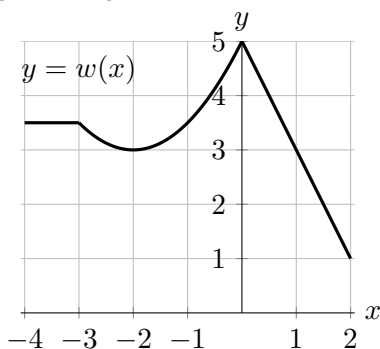
Answer: $B =$ _____ **Answer:** $k =$ _____

11. [4 points] A part of the graph of a function $h(x)$ is given below.

In each of the following parts, the corresponding portion of the graph of a function obtained from h by one or more transformations is shown, together with a list of possible formulas for that function. In each case choose the one correct formula for the function shown. *Note that the graphs are not all drawn at the same scale.*



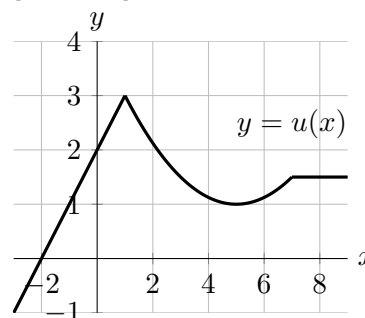
a. [2 points]



Answer: $w(x) =$ _____

- | | |
|----------------|------------------|
| A. $h(-x) - 2$ | F. $-h(x - 2)$ |
| B. $-h(x) - 2$ | G. $-h(-x + 2)$ |
| C. $-h(x) + 2$ | H. $-h(-x - 2)$ |
| D. $h(-x) + 2$ | I. $h(-x + 2)$ |
| E. $-h(x + 2)$ | J. $h(-x - 2)$ |
| | K. NONE OF THESE |

b. [2 points]



Answer: $u(x) =$ _____

- | | |
|----------------------|----------------------|
| A. $h(0.5x + 1)$ | F. $h(2x - 1)$ |
| B. $h(0.5x - 1)$ | G. $h(2x + 1)$ |
| C. $h(0.5(x - 1))$ | H. $h(2(x - 1))$ |
| D. $h(0.5(x + 1))$ | I. $h(2(x + 1))$ |
| E. $h(0.5(x - 0.5))$ | J. $h(0.5(x + 0.5))$ |
| | K. NONE OF THESE |