

Practice Problem 1

The function h , is given by the function $h(x) = 5x^5 - 2x^3 + 3x^2 - 1$. Which of the following would correctly describe the end behavior of h as the input values decrease without bound?

(a) $\lim_{x \rightarrow \infty} f(x) = -\infty$

(b) $\lim_{x \rightarrow -\infty} f(x) = -\infty$

(c) $\lim_{x \rightarrow \infty} f(x) = \infty$

(d) $\lim_{x \rightarrow -\infty} f(x) = \infty$

Practice Problem 2

For the polynomial function f , $\lim_{x \rightarrow \infty} f(x) = -\infty$, which of the following expressions could define $f(x)$?

(a) $-7x + 6x^8$

(b) $-7x^3 - 6x^8$

(c) $200x + \frac{x^3}{3}$

(d) $-x^4 + 6x^5$

Practice Problem 1 Solution:

(b) $\lim_{x \rightarrow -\infty} f(x) = -\infty$

Since the polynomial has an odd degree and the leading coefficient is positive, (b) is the answer.

Practice Problem 2 Solution:

(b) $-7x^3 - 6x^8$

Since the degree of the expression is even (8) and the leading coefficient is negative (-6), the end behavior as x increases without bound is $-\infty$, therefore (b) is the correct answer.

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