Exercise 50

For the following exercises, make a table to confirm the end behavior of the function.

$$f(x) = \frac{x^5}{10} - x^4$$

Solution

Plug in several values of x into the function and see what the corresponding values of y are.

x	y
-15	$-126\,563$
-10	$-20\,000$
-5	-937.5
0	0
5	-312.5
10	0
15	$25\,312.5$
20	$160\,000$

The leading term has x^5, a variable raised to an odd power, and its coefficient $(1/10)$ is positive, so $f(x) \to -\infty$ as $x \to -\infty$ and $f(x) \to \infty$ as $x \to \infty$.