

Exercise 38

If $2x \leq g(x) \leq x^4 - x^2 + 2$ for all x , evaluate $\lim_{x \rightarrow 1} g(x)$.

Solution

Since

$$2x \leq g(x) \leq x^4 - x^2 + 2$$

and

$$\lim_{x \rightarrow 1} (2x) = \lim_{x \rightarrow 1} (x^4 - x^2 + 2) = 2,$$

then

$$\lim_{x \rightarrow 1} g(x) = 2$$

by the squeeze theorem. The graph below illustrates the two bounding functions.

