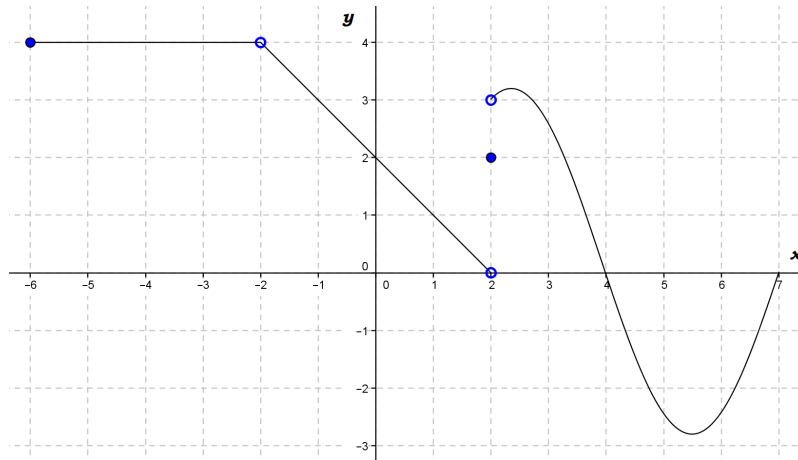


MATH 0120 Business Calculus. Suggested Exercises Section 2.1

University of Pittsburgh, Summer 6W2 2019

1. For the function $f(x)$ whose graph is given, state the value of each quantity, if it exists. If it does not exist, write DNE.



(a) $\lim_{x \rightarrow -2} f(x)$

(c) $\lim_{x \rightarrow 2} f(x)$

(b) $\lim_{x \rightarrow 2^+} f(x)$

(d) $f(2)$

(e) $f(0)$

2. Evaluate the following limits

(a) $\lim_{x \rightarrow 5} \frac{3x - 15}{x^2 - 25}$

(b) $\lim_{x \rightarrow 5} \frac{x^2}{x - 5}$

(c) $\lim_{x \rightarrow -3} \frac{x^2 - 9}{x^2 + 2x - 3}$

(d) $\lim_{x \rightarrow -\infty} \frac{x^2 - 9}{x^2 + 2x - 3}$

(e) $\lim_{x \rightarrow \infty} \sqrt{x^2 + 4x + 1} - x$

(f) $\lim_{x \rightarrow \infty} e^{-x}(x^3 + 2x + 1)$

3. Determine whether the function $g(x) = \begin{cases} \frac{x^2 - x}{x^2 - 1} & x \neq 1 \\ 1 & x = 1 \end{cases}$ is continuous at $a = 1$.

Justify your answer.

4. Determine the values of a and c so that the following function is continuous $g(x) = \begin{cases} x + 2c & x < -2 \\ 3ax + a & -2 \leq x \leq 1 \\ 3x - 2a & 1 < x \end{cases}$