MATH 0120 Business Calculus. Suggested Exercises Section 2.1

University of Pittsburgh, Summer 6W2 2019

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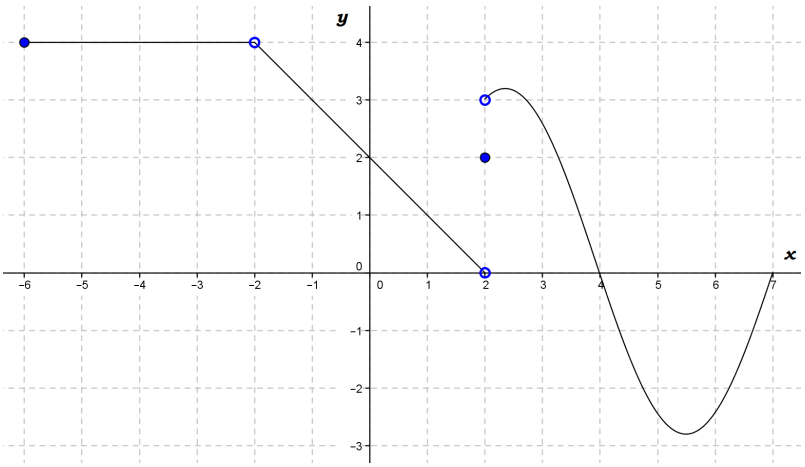
1. For the function $f(x)$ whose graph is given, state the value of each quantity, if it exists. If it does not exist, write DNE.



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

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

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

   (d) $f(2)$

   (e) $f(0)$

2. Evaluate the following llimits

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

   (b) $\lim_{x\to 5} \dfrac{x^2}{x-5}$

   (c) $\lim_{x\to -3} \dfrac{x^2-9}{x^2+2x-3}$

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

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

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

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

   Justify your answer.

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