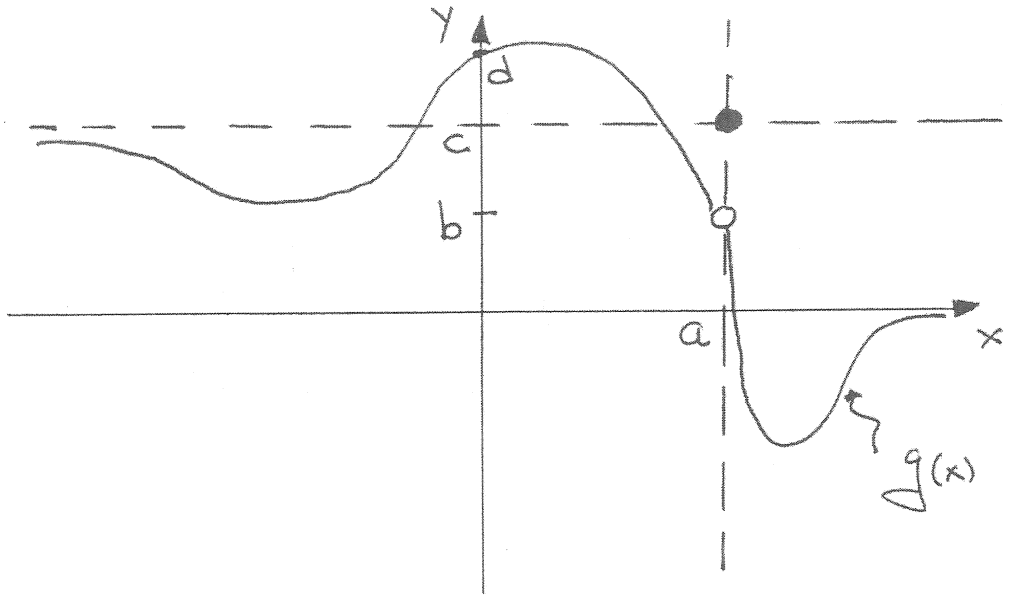
Problem of the Day # 1

Given the graph of $G(x)$ shown below, answer each of the following questions.



1. $\lim_{x\to\infty} g(x) =$
2. $\lim_{x\to-\infty} g(x) =$
3. $\lim_{x\to a^+} g(x) =$
4. $\lim_{x\to a^-} g(x) =$
5. $g(a) =$

ANSWER:

1. 0 2. c 3. b 4. b 5. c

Problem of the Day # 2

Answer each of the following questions for $g(x) = \frac{\cos x}{3x^2-5x}$. If a limit doesn't exist explain why.

1. $\lim_{x\to0^+} g(x) =$
2. $\lim_{x\to0^-} g(x) =$
3. $\lim_{x\to0} g(x) =$
4. $g(0) =$
5. $\lim_{x\to\pi} g(x) =$

ANSWER:

1. $\lim_{x\to 0^+} g(x) = -\infty$

2. $\lim_{x\to 0^-} g(x) = \infty$

3. $\lim_{x\to 0} g(x) = D.N.E.$ because $\lim_{x\to 0^+} g(x) = -\infty \neq \lim_{x\to 0^-} g(x) = \infty$

4. $g(0)$ =undefined

5. $\lim_{x\to \pi} g(x) = -.072$

Problem of the Day # 3

Evaluate each of the following limits. Do not use a calculator. Justify your answer.

1. $\lim_{x\to 3} \frac{3x^2-8x-3}{x-3} =$

2. $\lim_{x\to 3} \frac{x-3}{3x^2-8x-3} =$

3. $\lim_{x\to 2^+} \frac{5}{x-2} =$

4. $\lim_{x\to 3/4^-} \frac{-7}{3-4x} =$

ANSWER:

1. $\lim_{x\to 3} \frac{3x^2-8x-3}{x-3} = \lim_{x\to 3} \frac{(x-3)3x(3x+1)}{x-3} = \lim_{x\to 3} = 10$

2. $\lim_{x\to 3} \frac{x-3}{3x^2-8x-3} = \lim_{x\to 3} \frac{(x-3)}{(x-3)(3x+1)} = \lim_{x\to 3} \frac{1}{3x+1} = \frac{1}{10}$

3. $\lim_{x\to 2^+} \frac{5}{x-2} = \infty$

4. $\lim_{x\to 3/4^-} \frac{-7}{3-4x} = -\infty$
