Multiple Choice Practice

1. $\lim\limits_{x\to 0} \dfrac{4x-3}{7x+1} =$

     A. ∞ B. $-\infty$ C. 0 D. $\dfrac{4}{7}$ E. -3

2. $\lim\limits_{x\to \frac{1}{3}} \dfrac{9x^2-1}{3x-1} =$

     A. ∞ B. $-\infty$ C. 0 D. 2 E. 3

3. $\lim\limits_{x\to 2} \dfrac{x^3-8}{x^2-4} =$

     A. 4 B. 0 C. 1 D. 3 E. 2

4. The function $G(x) = \begin{cases} x-3, & x < 2 \\ -5, & x = 2 \\ 3x-7, & x > 2 \end{cases}$ is not continuous at $x = 2$ because…

     A. $G(2)$ is not defined
     B. $\lim\limits_{x\to 2} G(x)$ does not exist
     C. $\lim\limits_{x\to 2} G(x) \neq G(2)$
     D. Only reasons B and C
     E. All of the above reasons.

5. $\lim\limits_{x\to \infty} \dfrac{-3x^2+7x^3+2}{2x^3-3x^2+5} =$

     A. ∞ B. $-\infty$ C. 1 D. $\dfrac{7}{2}$ E. $-\dfrac{3}{2}$

6. $\lim\limits_{x\to -2} \dfrac{\sqrt{2x+5}-1}{x+2} =$

     A. 1
     B. 0
     C. ∞
     D. $-\infty$
     E. Does Not Exist

7. If $f(x) = 3x^2 - 5x$, then find $\lim\limits_{h \to 0} \frac{f(x+h)-f(x)}{h}$.

    A. $3x - 5$
    B. $6x - 5$
    C. $6x$
    D. 0
    E. Does not exist

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8. $\lim\limits_{x \to -\infty} \frac{2-5x}{\sqrt{x^2+2}} =$

    A. 5   B. –5   C. 0   D. $-\infty$ E. ∞

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9. The function $f(x) = \frac{2x^2+x-3}{x^2+4x-5}$ has a vertical asymptote at $x = -5$ because…

    A. $\lim\limits_{x \to -5^+} f(x) = \infty$
    B. $\lim\limits_{x \to -5^-} f(x) = -\infty$
    C. $\lim\limits_{x \to -5^-} f(x) = \infty$
    D. $\lim\limits_{x \to \infty} f(x) = -5$
    E. $f(x)$ does not have a vertical asymptote at $x = -5$

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10. Consider the function $H(x) = \begin{cases} 3x - 5, & x < 3 \\ x^2 - 2x, & x \geq 3 \end{cases}$. Which of the following statements is/are true?

    I. $\lim\limits_{x \to 3^-} H(x) = 4$.   II. $\lim\limits_{x \to 3} H(x)$ exists.   III. $H(x)$ is continuous at $x = 3$.

    A. I only
    B. II only
    C. I and II only
    D. I, II and III
    E. None of these statements is true