The questions on this page are multiple choice. They do not require an explanation. For each question, circle your choice for the correct answer(s). (4 points each part. No partial credit.)

(1A.) Let $V(t)$ represent the number of thousands of gallons of water in a tank t hours after midnight on a fixed day. Circle the pair of equations below that expresses the following statement:

"At 3PM there were 9000 gallons of water in the tank, and the amount of water in the tank was decreasing at the rate of 200 gallons per hour."

(a) $V(3) = 9000$, $V'(3) = -200$

(b) $V(3) = 9$, $V'(3) = 200$

(c) $V(15) = 9000$, $V'(15) = -200$

(d) $V(15) = 9$, $V'(15) = -0.2$

(e) $V(15) = 9$, $V'(15) = 0.2$

(1B.) As $x \to \infty$, the function $f(x) = \frac{x^3+3x+5}{2x^3-7x+6}$ approaches

(a) $y = 0$

(b) $y = \frac{1}{2}$

(c) $y = \frac{5}{6}$

(d) $y = 1$

(e) ∞

(1C.) If the product $f(x_0) \cdot f'(x_0) \cdot f''(x_0) > 0$, then which of the following is possible? Circle any answer(s) which could be true:

(a) The graph is above the x-axis, and is decreasing and concave up.

(b) The graph is above the x-axis, and is decreasing and concave down.

(c) The graph is above the x-axis, and is increasing and concave down.

(d) The graph is below the x-axis, and is increasing and concave up.

(e) The graph is below the x-axis, and is decreasing and concave down.

(1D) Suppose that $\lim_{h \to 0} \frac{f(2+h)-f(2)}{h} = 1$. Which of the following must be true?

1. $\lim_{x \to 2} f(x) = 1$.
2. f is continuous at $x = 2$.
3. $f'(2) = 1$.

(a) 1 only

(b) 2 only

(c) 3 only

(d) 2 and 3 only

(e) 1, 2, and 3