Answers for class prep quiz on sections 2.5–2.6, Stewart's Calculus (8th ed.)

1. **Answer:** (d). Each of graphs (a)–(c) has exactly one thing wrong with it:
   - In graph (a), $\lim_{x\to 1} h(x) \neq h(1)$, so h is not continuous at $x = 1$.
   - In graph (b), $\lim_{x\to 2} h(x) = h(2)$, so h is continuous at $x = 2$.
   - In graph (c), $\lim_{x\to 3} h(x)$ exists, even though it is not equal to $h(3)$.

2. **Answer:** (b). One way to think of this problem is to classify functions in terms of their (so to speak) chocolate-y goodness. Among the kinds of functions we have studied so far, continuous functions are the best, and function with limits at a and functions with values of a are not as good. Moreover, having a limit at $x = a$ doesn't imply a function has a value at $x = a$, and vice versa.

3. **Answer:** (b). The Intermediate Value Theorem implies that if a continuous function g has a positive value at one point and a negative value at another, then g must have a 0 value somewhere in between; that's why (a), (c), and (d) are consequences of IVT. In (b), even if $g(-1) > 0$ and $g(5) > 0$, that doesn't necessarily mean that the values of g are all positive in between.

4. **Answer:** (c). As $x \to \infty$, the values of $h(x)$ seem to wiggle around the value 1, but seem to be getting closer, so it seems that $\lim_{x\to\infty} h(x) = 1$. On the other hand, we see that $\lim_{x\to 1^-} h(x) = +\infty$ and $\lim_{x\to 1^+} h(x) = -\infty$, so $\lim_{x\to 1} h(x)$ does not exist.