Answers for class prep quiz on section 2.2, Stewart's Calculus (8th ed.)

1. **Answer:** (c). As x approaches -2, 0, or 4, the values of $f(x)$ appear to approach one particular y value, even though $f(-2)$ does not exist and $f(4)$ is not equal to the limit of $f(x)$ as x approaches $x = 4$. However, as x approaches 3, $f(x)$ appears to approach two different values on the left and right.

2. **Answer:** (c). All of the indicated one-sided limits exist, because as x approaches either -2, 0, or 3 *from the positive side*, the values of $f(x)$ approach a particular y value. However, as x approaches 3 from the positive side, the values of $f(x)$ approach a negative number. (In fact, the values of $f(x)$ approach $f(3) < 0$.) The other three one-sided limits have the indicated signs.

3. **Answer:** (c). For example, if we compute values of $f(x)$ for x very close to 1 (try values like $x = 1.0001$, $x = 1.00001$, etc.), we see that $f(x)$ approaches 6.

4. **Answer:** (d). Even though it is reasonable to think that the values in (a)–(c) might well be very close to $\lim_{x \to 2} \dfrac{e^x - e^2}{x - 2}$, there is no reason to think that they are exactly equal to the limit. (Warning: A calculator or computer might not be able to tell the difference.)