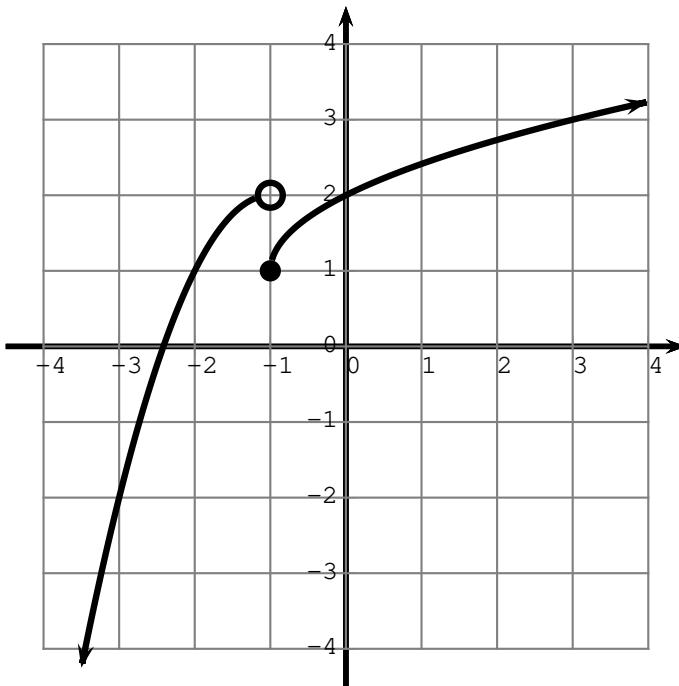


Calculus I**Study Guide 3****Due Date:** _____**Name:** _____**Class:** _____**Score:** _____**No Work \Leftrightarrow No Points****Use Pencil Only \Leftrightarrow Be Neat & Organized**

1. Use the graph of the function $f(x)$ below to evaluate the following:



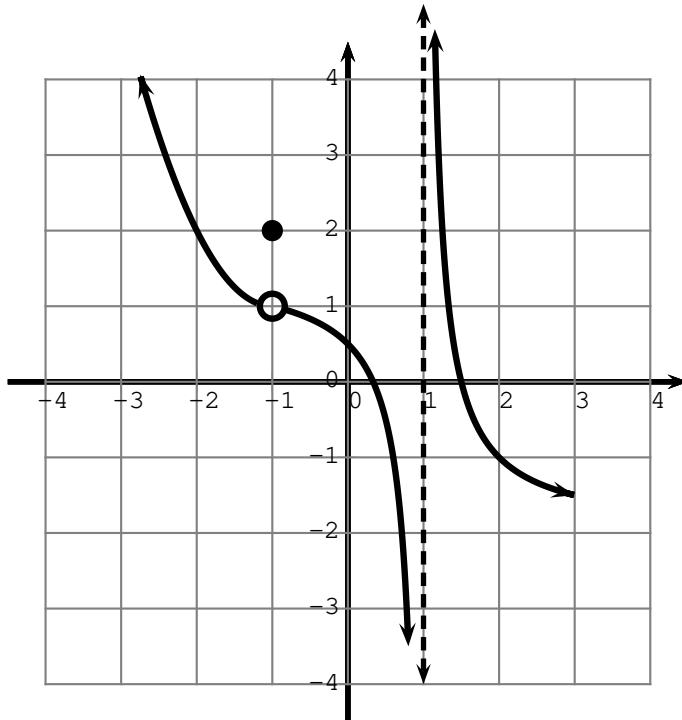
- (a) (3 points) Is $f(x)$ continuous at $x = 0$? Must show work.

(a) _____

- (b) (3 points) Is $f(x)$ continuous at $x = -1$? Must show work.

(b) _____

2. Use the graph of the function $f(x)$ below to evaluate the following:



(a) (3 points) Is $f(x)$ continuous at $x = -1$? Must show work.

(a) _____

(b) (3 points) Is $f(x)$ continuous at $x = 2$? Must show work.

(b) _____

3. (4 points) Evaluate $\lim_{h \rightarrow 0} \frac{f(x + h) - f(x)}{h}$ for any constant function $f(x) = c$.

3. _____

4. (5 points) Evaluate $\lim_{h \rightarrow 0} \frac{f(x + h) - f(x)}{h}$ for any linear function $f(x) = mx + b$.

4. _____

5. (5 points) Evaluate $\lim_{h \rightarrow 0} \frac{f(x + h) - f(x)}{h}$ for any quadratic function $f(x) = ax^2 + bx + c$.

5. _____

6. (4 points) Evaluate: $\lim_{x \rightarrow 1} \frac{x^2 + x - 2}{x^2 - x}$

6. _____

7. (5 points) Evaluate: $\lim_{x \rightarrow 0} \frac{\sqrt{x^2 + 100} - 10}{x^2}$

7. _____

8. (5 points) Evaluate: $\lim_{x \rightarrow 0} \frac{\frac{1}{x-1} + \frac{1}{x+1}}{x}$

8. _____

9. (5 points) Evaluate: $\lim_{x \rightarrow -1} \frac{x^3 - x^2 - 5x - 3}{(x + 1)^2}$

Hint: Use synthetic division to factor the numerator.

9. _____

10. (5 points) Evaluate $\lim_{x \rightarrow a} \frac{2f(x) - g(x)}{\sqrt[3]{(f(x) + 7)^2}}$ if $\lim_{x \rightarrow a} f(x) = 1$ and $\lim_{x \rightarrow a} g(x) = -6$.

10. _____