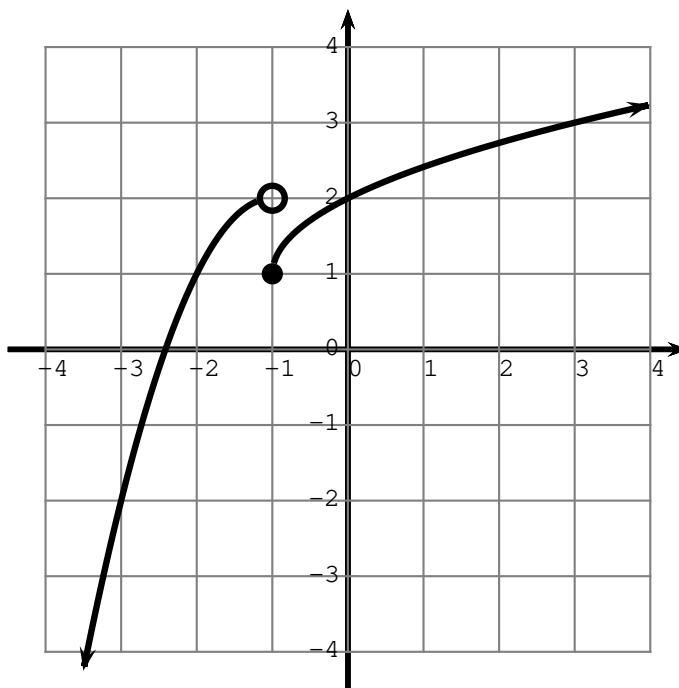| Calculus I	Name:
Study Guide 3	Class:
Due Date:	Score:

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) _____

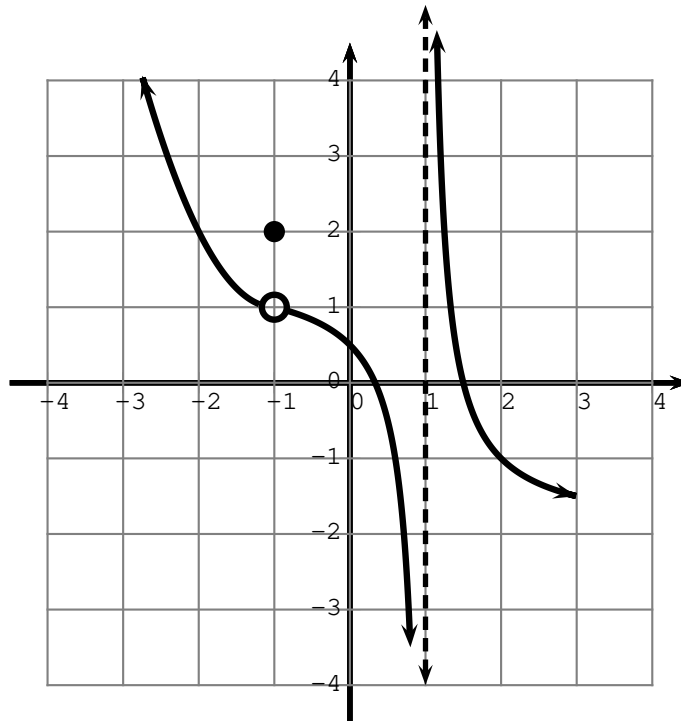2. Use the graph of the function $f(x)$ below to evaluate the following:

(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 $\displaystyle\lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$ for any constant function.

3. _____

4. (2 points) True or False: All parabolas represent a function.

4. _____

5. (5 points) Find and simplify the difference quotient for $f(x) = mx + b$, and then evaluate for $h = 0$.

5. _____

6. (4 points) Simplify: $(1 + \tan x)^2 - \dfrac{1}{(1 + \sin x)(1 - \sin x)}$

6. _____

7. (4 points) Evaluate: $\displaystyle \lim_{x \to 1} \dfrac{x^2 + x - 2}{x^2 - x}$

7. _____

8. (4 points) Evaluate: $\displaystyle \lim_{x \to 0} \dfrac{\sqrt{x^2 + 100} - 10}{x^2}$

8. _____

9. (5 points) Evaluate: $\displaystyle\lim_{x\to 0} \frac{\dfrac{1}{x-1} + \dfrac{1}{x+1}}{x}$

9. _____

10. (5 points) Evaluate: $\displaystyle\lim_{x\to -1} \frac{x^3 - x^2 - 5x - 3}{(x+1)^2}$

Hint: Use synthetic division to factor the numerator.

10. _____

11. (5 points) Evaluate $\displaystyle\lim_{x\to a} \frac{2f(x) - g(x)}{\sqrt[3]{(f(x) + 7)^2}}$ if $\displaystyle\lim_{x\to a} f(x) = 1$ and $\displaystyle\lim_{x\to a} g(x) = -6$.

11. _____