

## Quiz 2

September 2, 2016

Show all work and circle your final answer.

1. Write  $\log 2 + \log a + 2 \log b - 3 \log c$  as a single logarithm.

$$\begin{aligned} &= \log 2 + \log a + \log b^2 - \log c^3 \\ &= \boxed{\log \left( \frac{2ab^2}{c^3} \right)} \end{aligned}$$

2. Determine the infinite limit  $\lim_{x \rightarrow 2^-} \frac{x^2 - 3}{x^2 - 4}$

As  $x \rightarrow 2^-$ ,  $x^2 - 3$  approaches 1 and  $x^2 - 4$  approaches 0 from the left. So we get  $\frac{1}{-\text{SMALL}} \rightarrow \boxed{-\infty}$

3. Given the following sketch of  $f(x)$ , determine the following limits (write DNE if the limit does not exist):

- (a)  $\lim_{x \rightarrow a^-} f(x) = 4$
- (b)  $\lim_{x \rightarrow a^+} f(x) = 4$
- (c)  $\lim_{x \rightarrow a} f(x) = 4$
- (d)  $\lim_{x \rightarrow b^-} f(x) = 1$
- (e)  $\lim_{x \rightarrow b^+} f(x) = 2$
- (f)  $\lim_{x \rightarrow b} f(x) \text{ DNE}$

