

*Calculus I***Quiz 3—Friday, February 14**

$$\text{Let } f(x) = \frac{x+2}{x-1}.$$

Complete the ten blanks below using simple numerical values, showing how one computes $f'(2)$ from the definition.

$$f'(2) = \lim_{x \rightarrow 2} \frac{f(x) - f(\mathbf{2})}{x - 2}$$

$$= \lim_{x \rightarrow 2} \frac{\frac{x+2}{x-1} - \mathbf{4}}{x - 2}$$

$$= \lim_{x \rightarrow 2} \frac{x + 2 - \mathbf{4}(x - 1)}{(x - 1)(x - \mathbf{2})}$$

$$= \lim_{x \rightarrow 2} \frac{6 - 3x}{(x - 1)(x - \mathbf{2})}$$

$$= \lim_{x \rightarrow 2} \frac{\mathbf{3}(2 - x)}{(x - 1)(x - \mathbf{2})}$$

$$= \lim_{x \rightarrow 2} \frac{\mathbf{-3}}{x - 1}$$

$$= \mathbf{-3}.$$