

6. minutes - 111

$$f(x) = \sqrt{5x^2+4}$$

$$f'(1) = \lim_{x \rightarrow 1} \frac{f(x) - f(1)}{x - 1} = \lim_{x \rightarrow 1} \frac{\sqrt{5x^2+4} - 3}{x - 1} \cdot \frac{\sqrt{5x^2+4} + 3}{\sqrt{5x^2+4} + 3}$$

$$= \lim_{x \rightarrow 1} \frac{(5x^2+4) - 9}{(x-1) \cdot (\sqrt{5x^2+4} + 3)} =$$

VOAL

$$= \left(\lim_{x \rightarrow 1} \frac{1}{\sqrt{5x^2+4} + 3} \right) \cdot \left(\lim_{x \rightarrow 1} \frac{5x^2-5}{x-1} \right) =$$

$\frac{1}{6}$

$$= \frac{1}{6} \cdot \lim_{x \rightarrow 1} \frac{5 \cdot \cancel{(x-1)} \cdot (x+1)}{\cancel{x-1}} = \frac{1}{6} \cdot 5 \cdot 2 = \frac{10}{6} = \frac{5}{3}$$