Outline

1. Trig Derivatives
More Trig Derivatives
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5. \( \frac{d}{dx}(\cot(x)) = -(\csc(x))^2 \)
Chain Rule

If $g$ is differentiable at $x$ and $f$ is differentiable at $g(x)$, then the composition function $F = f \circ g$ defined by $F(x) = f(g(x))$ is differentiable at $x$ and

$$F'(x) = f'(g(x))g'(x)$$
Change of variable rule for limits

If \( \lim_{x \to 0} f(x) = 0 \), then

\[
\lim_{x \to 0} g(f(x)) = \lim_{f(x) \to 0} g(f(x)) = \lim_{u \to 0} g(u).
\]