

Practice Problems for Exam #1

- Give an equation for the graph of $y = x^2 - 1$ stretched vertically by a factor of 2.
 - Graph a function which is both even *and* odd. What is this function?
- Find the average rate of change of $f(x) = x^2 - 1$ on $[-1, 2]$.
- Find the following limits.
 - $\lim_{x \rightarrow 1} \frac{x^2 - 1}{x + 1}$
 - $\lim_{x \rightarrow 1} \frac{x^2 - 1}{x^3 - 1}$
- Find the following limits.
 - $\lim_{x \rightarrow 1^+} \frac{x^2 - 1}{(x - 1)^2}$
 - $\lim_{x \rightarrow \infty} \frac{x^2 - 1}{(x - 1)^2}$
- Find a $\delta > 0$ such that for all x with $0 < |x - 1| < \delta$, $|\sqrt{x} - 1| < .01$.
- For $f(x) = x^2 - 1$, find $f'(3)$ and an equation for the tangent line to the graph $y = f(x)$ at the point where $x = 3$.
- Do exercise #42 on page 114.