

Fall 2017

Quiz 3

Math 0220

20 minutes

Name: _____

No calculators, no notes, no books. Show all your work (no work = no credit). Write neatly.

1. Find the limit

(a) (3 points) $\lim_{x \rightarrow (-\pi/2)^-} \sec x$

(b) (3 points) $\lim_{x \rightarrow \infty} (\sqrt{x^2 - x} - x)$

2. (5 points) Using limit find the slope of the tangent line to the curve $y = 1 + x^2$ at the point $(-2, 5)$.

3. (4 points) The graph of the function f is drawn. Sketch the graph of f' below it.

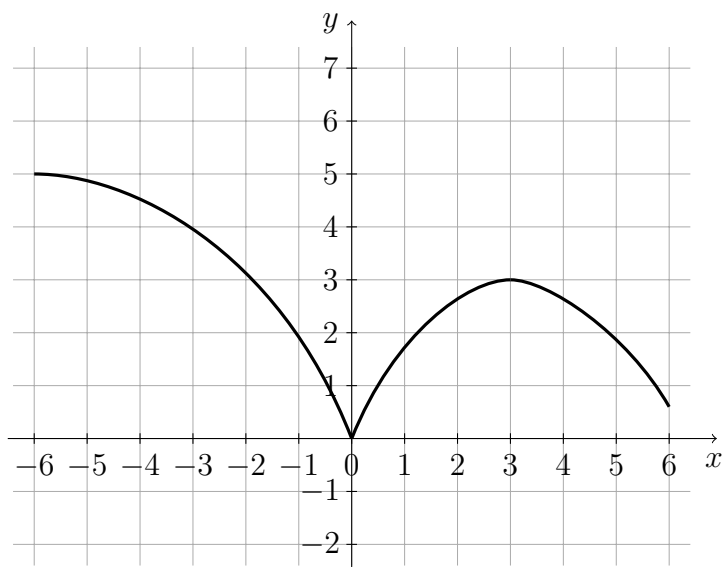


Figure 1: Graph of f .

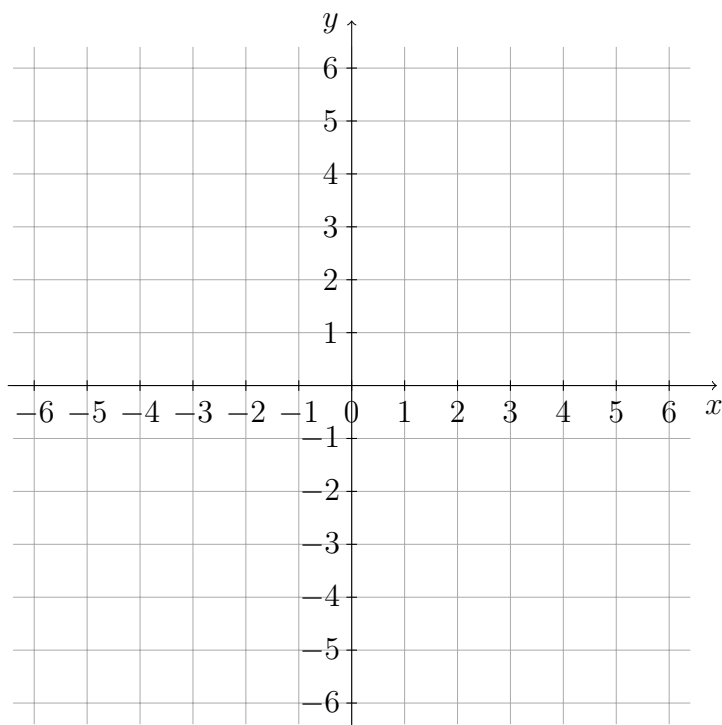


Figure 2: Graph of f' .

bonus problem (5 points extra) Find a formula of a function f that satisfies the following conditions

$$\lim_{x \rightarrow -\infty} f(x) = 0,$$

$$f(2) = 0,$$

$$\lim_{x \rightarrow +\infty} f(x) = 0,$$

$$\lim_{x \rightarrow 3^-} f(x) = \infty,$$

$$\lim_{x \rightarrow 0} f(x) = -\infty,$$

$$\lim_{x \rightarrow 3^+} f(x) = -\infty.$$