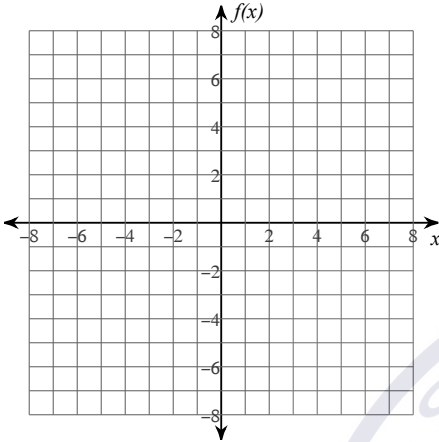


SATPREP

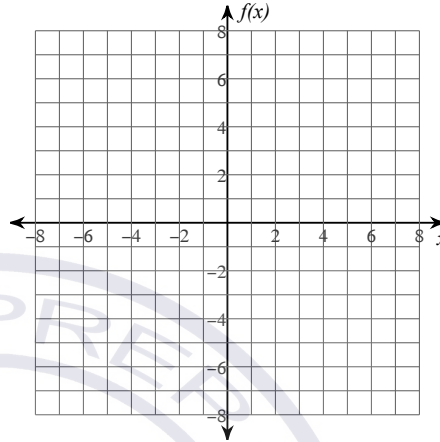
Average and Instantaneous Rate of Change

For each problem, find the average rate of change of the function over the given interval. You may use the provided graph to sketch the function.

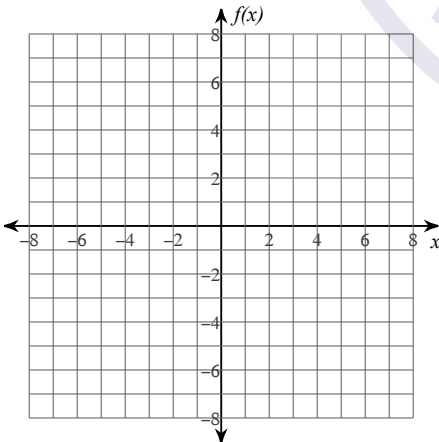
1) $f(x) = x^2 - 2x + 1$; $[0, \frac{1}{3}]$



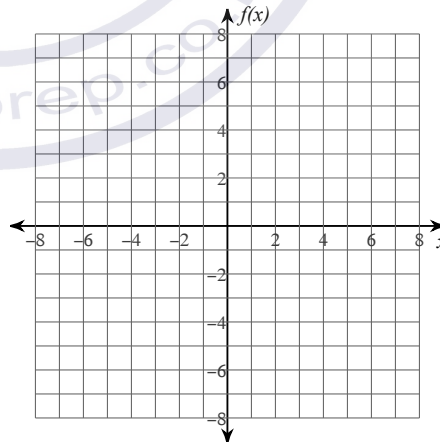
2) $f(x) = \frac{1}{x+2}$; $[0, \frac{1}{4}]$



3) $f(x) = \frac{1}{x-2}$; $[-4, -\frac{11}{3}]$

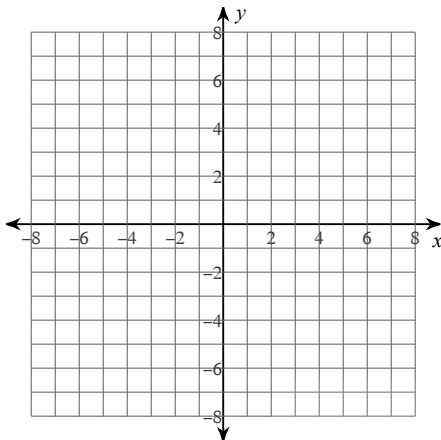


4) $f(x) = -x^2 + 1$; $[-1, -\frac{3}{4}]$

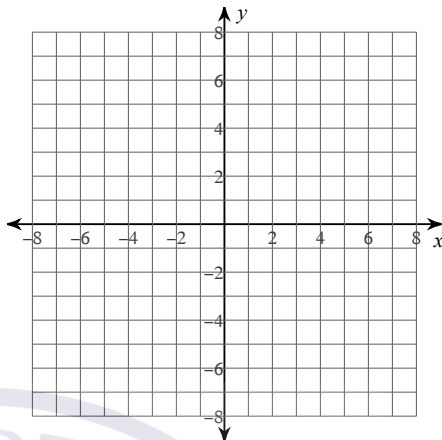


For each problem, find the instantaneous rate of change of the function at the given value. You may use the provided graph to sketch the function.

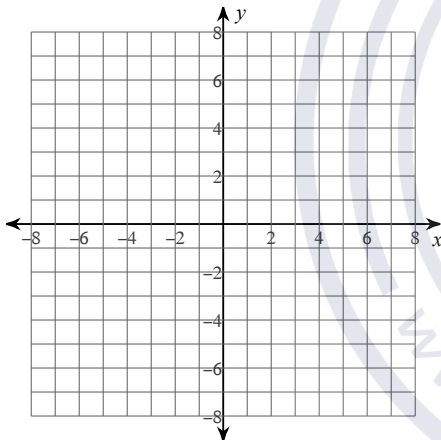
5) $y = \frac{1}{x+1}$; 0



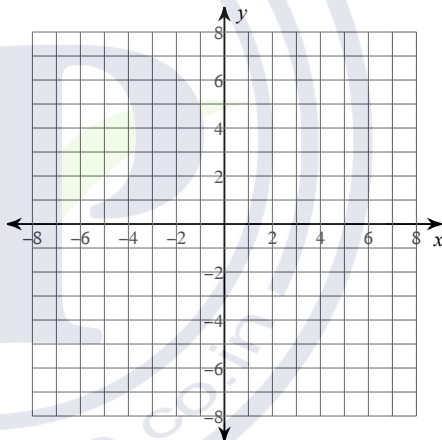
6) $y = -\frac{1}{x-3}$; -3



7) $y = 2x^2 + 2$; -1



8) $y = x^2 + x - 1$; 0



For each problem, find the average rate of change of the function over the given interval and also find the instantaneous rate of change at the leftmost value of the given interval.

9) $y = x^2 - 2x + 2$; $[-1, -\frac{1}{2}]$

10) $y = 2x^2 - x + 1$; $[0, \frac{1}{2}]$

11) $y = 2x^2 + x - 1$; $[-1, -\frac{1}{2}]$

12) $y = 2x^2 + 2x + 1$; $[-2, -\frac{3}{2}]$



Answers to Average and Instantaneous Rate of Change

1) $-\frac{5}{3}$

2) $-\frac{2}{9}$

3) $-\frac{1}{34}$

4) $\frac{7}{4}$

5) -1

6) $\frac{1}{36}$

7) -4

8) 1

9) Average: $-\frac{7}{2}$ Instant.: -4

10) Average: 0 Instant.: -1

11) Average: -2 Instant.: -3

12) Average: -5 Instant.: -6

