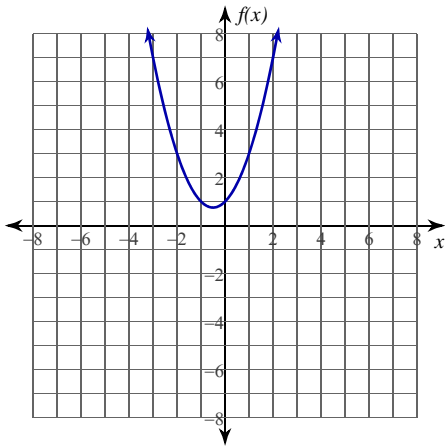


## Instantaneous Rates of Change

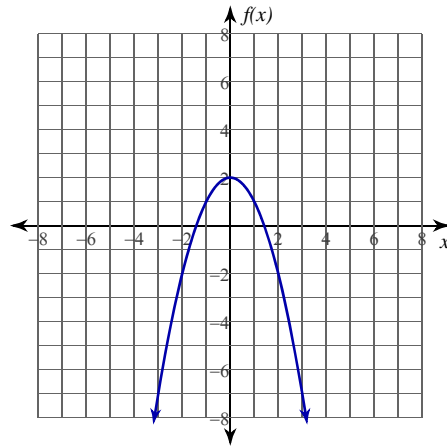
Date \_\_\_\_\_ Period \_\_\_\_\_

For each problem, find the instantaneous rate of change of the function at the given value.

1)  $f(x) = x^2 + x + 1$ ;  $-2$

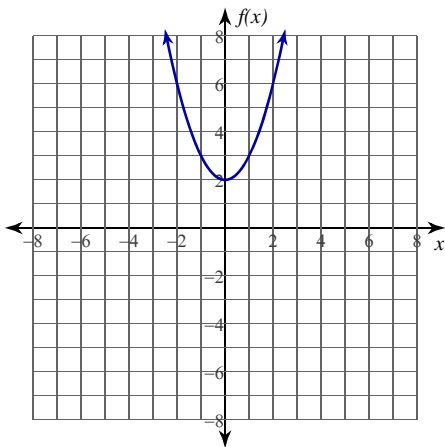


2)  $f(x) = -x^2 + 2$ ;  $-2$

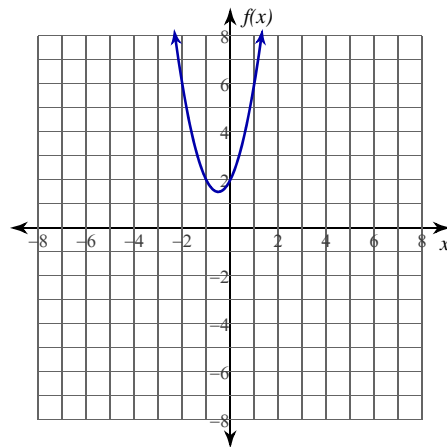


For each problem, find the equation of the tangent line to the function at the given point.

3)  $f(x) = x^2 + 2$ ;  $(-2, 6)$



4)  $f(x) = 2x^2 + 2x + 2$ ;  $(0, 2)$



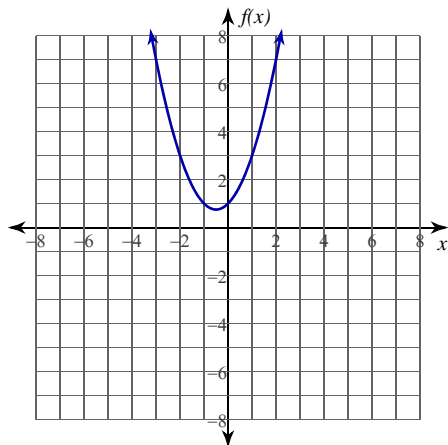
**Critical thinking question:**

5) Look back to problem 1. At what value of  $x$  is the derivative 0?

## Instantaneous Rates of Change

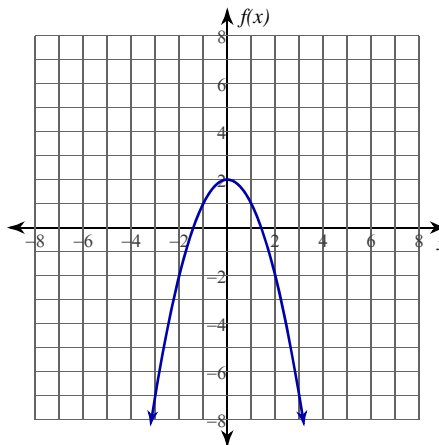
For each problem, find the instantaneous rate of change of the function at the given value.

1)  $f(x) = x^2 + x + 1$ ;  $-2$



-3

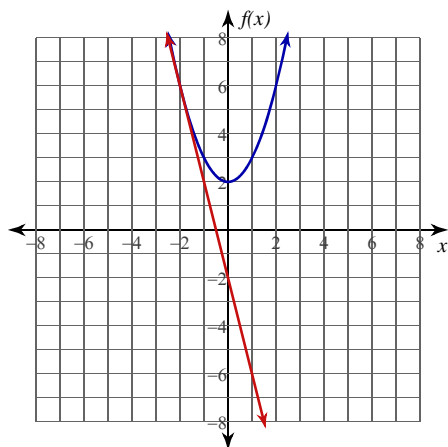
2)  $f(x) = -x^2 + 2$ ;  $-2$



4

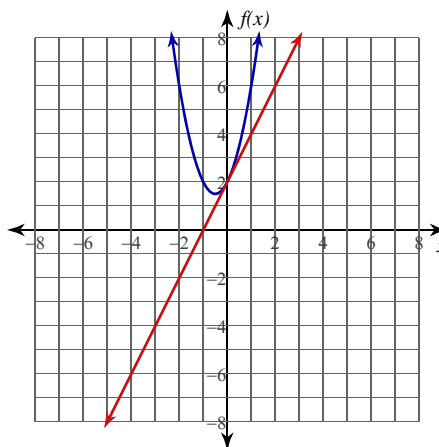
For each problem, find the equation of the tangent line to the function at the given point.

3)  $f(x) = x^2 + 2$ ;  $(-2, 6)$



$y = -4x - 2$

4)  $f(x) = 2x^2 + 2x + 2$ ;  $(0, 2)$



$y = 2x + 2$

**Critical thinking question:**

5) Look back to problem 1. At what value of  $x$  is the derivative 0?

The derivative is 0 at  $x = -\frac{1}{2}$ .