Name_____

# Calculus Practice: Instantaneous Rate of Change 1b

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

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

2) $f(x) = 2x^2 + 1; \quad 0$

3) $f(x) = 2x^2 + 1; \quad 1$

4) $y = -x^2 + 1; \quad -2$

5) $y = -\dfrac{1}{x+2}; \quad -1$

6) $f(x) = -\dfrac{1}{x}; \quad 2$

7) $y = \dfrac{1}{x+1}; \quad 1$

8) $y = \dfrac{1}{x+3}; \quad -2$

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

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

10) $f(x) = 2x^2 + 2$; $(-1, 4)$

11) $y = -2x^2 + 2$; $(1, 0)$

12) $y = x^2 - 2$; $(2, 2)$

13) $f(x) = \dfrac{1}{x+3}$; $(-2, 1)$

14) $f(x) = \dfrac{1}{x-3}$; $\left(-2, -\dfrac{1}{5}\right)$

15) $y = -\dfrac{1}{x}$; $(1, -1)$

16) $y = -\dfrac{1}{x}$; $\left(2, -\dfrac{1}{2}\right)$

Name_____

## Calculus Practice: Instantaneous Rate of Change 1b

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

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

$-5$

2) $f(x) = 2x^2 + 1$;  $0$

$0$

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

$4$

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

$4$

5) $y = -\dfrac{1}{x+2}$;  $-1$

$1$

6) $f(x) = -\dfrac{1}{x}$;  $2$

$\dfrac{1}{4}$

7) $y = \dfrac{1}{x+1}$;  $1$

$-\dfrac{1}{4}$

8) $y = \dfrac{1}{x+3}$;  $-2$

$-1$

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

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

$y = 4x + 3$

10) $f(x) = 2x^2 + 2;\ (-1, 4)$

$y = -4x$

11) $y = -2x^2 + 2;\ (1, 0)$

$y = -4x + 4$

12) $y = x^2 - 2;\ (2, 2)$

$y = 4x - 6$

13) $f(x) = \dfrac{1}{x+3};\ (-2, 1)$

$y = -x - 1$

14) $f(x) = \dfrac{1}{x-3};\ \left(-2, -\dfrac{1}{5}\right)$

$y = -\dfrac{1}{25}x - \dfrac{7}{25}$

15) $y = -\dfrac{1}{x};\ (1, -1)$

$y = x - 2$

16) $y = -\dfrac{1}{x};\ \left(2, -\dfrac{1}{2}\right)$

$y = \dfrac{1}{4}x - 1$