

## 13.4 Worksheet #2

Continuity, Alternative Form Defn of Deriv

Use the alternative form of the definition of the derivative to find the derivative at  $x = c$ .

1.  $f(x) = x^2 - 2, c = 5$

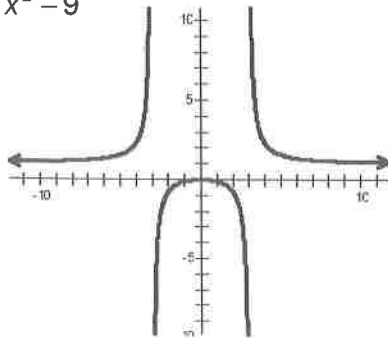
2.  $f(x) = x^2 - 3x, c = 1$

3.  $f(x) = x^3 - 8, c = -1$

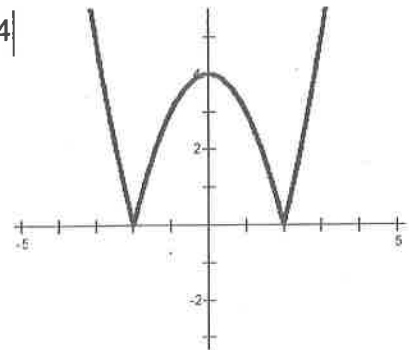
4.  $f(x) = \frac{1}{x}, c = 2$

Find any  $x$ -values at which the function is not differentiable and explain why.

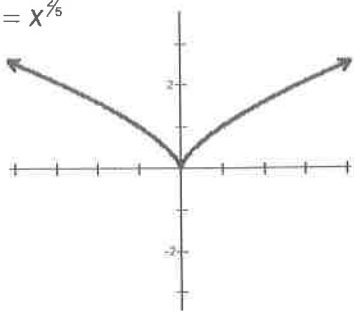
5.  $f(x) = \frac{x^2}{x^2 - 9}$



6.  $f(x) = |x^2 - 4|$



7.  $f(x) = x^{2/5}$



8.  $f(x) = |x - 2|$

9.  $f(x) = \frac{4x}{x+1}$

10.  $f(x) = \begin{cases} 2x - 5 & \text{if } x > 0 \\ x + 3 & \text{if } x \leq 0 \end{cases}$

11.  $f(x) = (x - 2)^{2/3}$

12.  $f(x) = \begin{cases} x^2 + 1 & \text{if } x > 1 \\ 2x & \text{if } x \leq 1 \end{cases}$

13.  $f(x) = \begin{cases} x^2 & \text{if } x > 1 \\ x^3 & \text{if } x \leq 1 \end{cases}$