### Preliminaries and Objectives

**Preliminaries**
- Graphs of common functions

**Objectives**
- Graph a piecewise-defined function

### Example 1

\[ f(x) = \begin{cases} 
3 - 2x & \text{if } x < 1 \\
 x^2 & \text{if } 1 \leq x < 2 \\
 8 - 2x & \text{if } x \geq 2 
\end{cases} \]

### Example 2

\[ f(x) = |x| 
\]

\[ f(x) = \begin{cases} 
x & \text{if } x \geq 0 \\
-x & \text{if } x < 0 
\end{cases} \]

### Example 3

\[ f(x) = \begin{cases} 
x & \text{if } x < -2 \\
x^2 & \text{if } x \geq -2 
\end{cases} \]

### Example 4 - Not a Function

\[ f(x) = \begin{cases} 
x & \text{if } x \leq 2 \\
x^2 & \text{if } x \geq -1 
\end{cases} \]

### Recap

\[ f(x) = \begin{cases} 
f_1(x) & \text{if } x \in D_1 \\
f_2(x) & \text{if } x \in D_2 
\end{cases} \]

Graph \( f_1(x) \) on \( D_1 \) and \( f_2(x) \) on \( D_2 \)