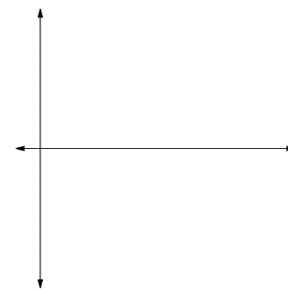
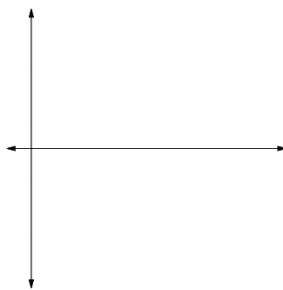
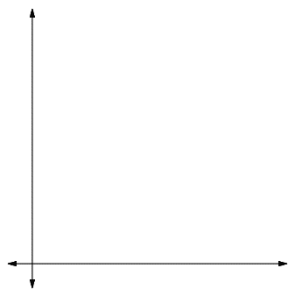
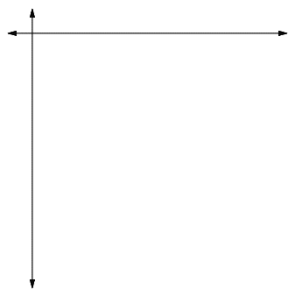
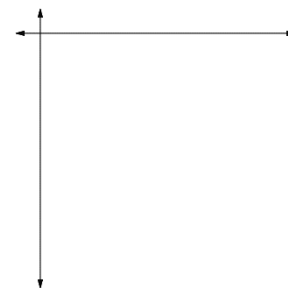
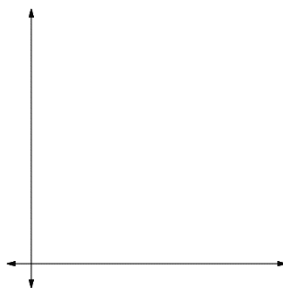
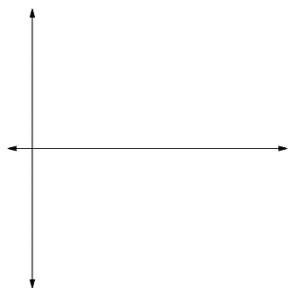
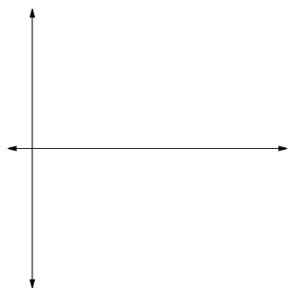
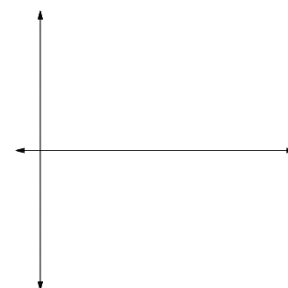
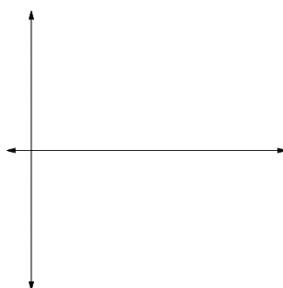
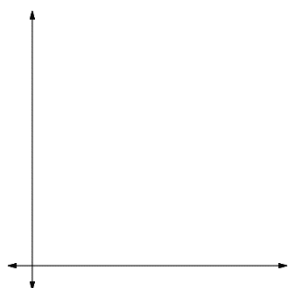
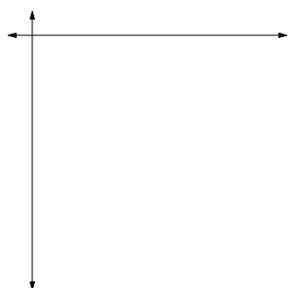


Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Learning Goal 4.1**

Using derivative tests for curve sketching.

**Concavity** given that  $f'(c) = 0$ , we have three casesAnd this is how  $f'(x)$  is changing in each caseAnd this is how  $f''(x)$  is changing in each case.

**Example** Discuss the concavity of  $y = \sqrt{x}$  and  $y = \sqrt[3]{x}$ .

Concavity can replace the First Derivative Test too!

**Theorem**

**Inflection Points** are points  $(c, f(c))$  where

**Example** Given that  $y = x^4 - 4x^3$ , find the inflection points, the intervals over which the function is concave up or down, and use  $f''(x)$  to find any local extrema.