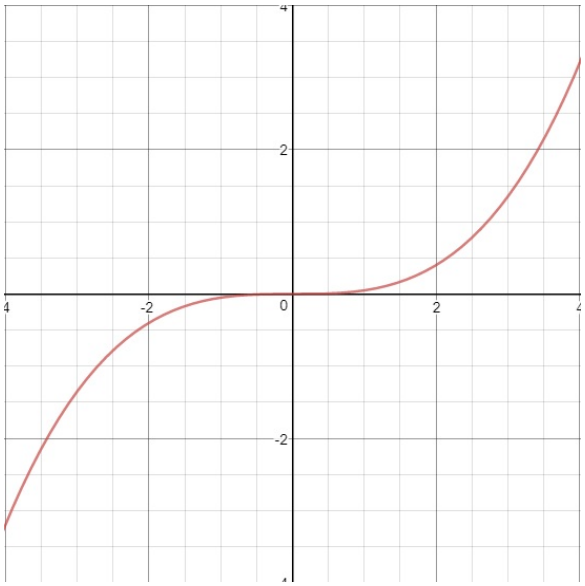
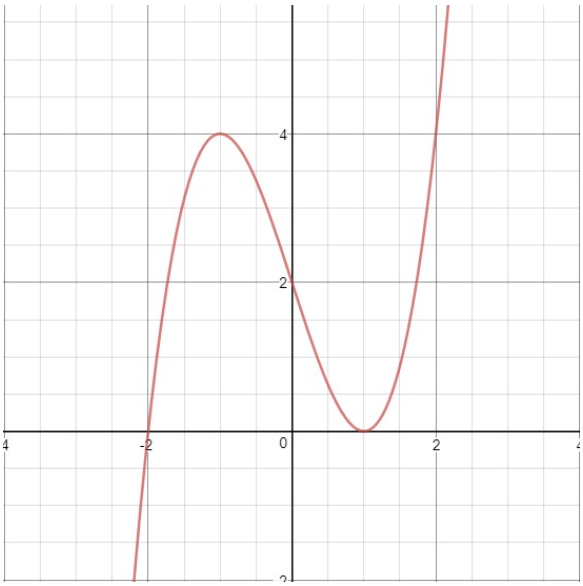
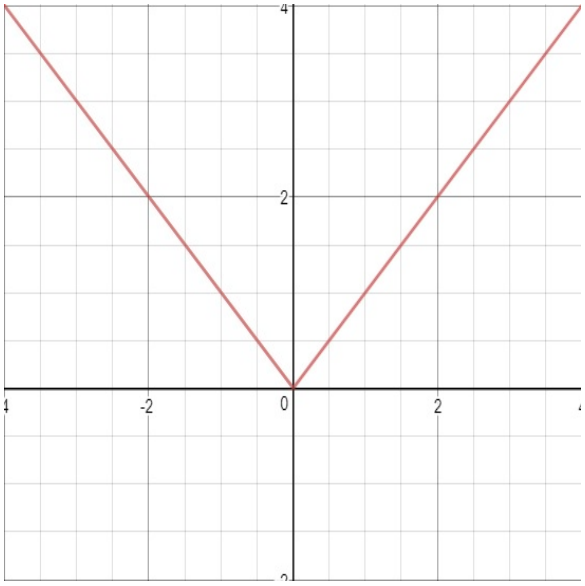
Lesson 21 Worksheet

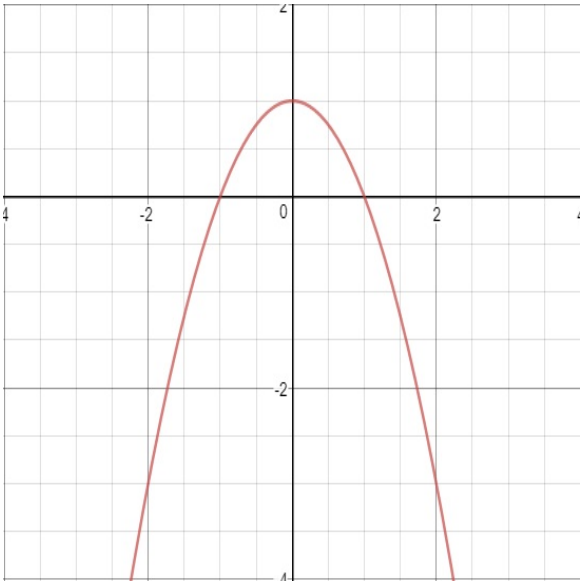
March 7, 2018

Given the following graphs of the **derivative** $f'(x)$, determine where $f(x)$ is increasing and decreasing, concave up and concave down.

1. 

3. 

2. 

4. 

Answers:

1. Increasing $(0, \infty)$; decreasing $(-\infty, 0)$; concavae up $(-\infty, \infty)$; never concave down
2. Increasing $(-\infty, \infty)$ (with a critical point at $x = 0$); never decreasing; concave up $(0, \infty)$; concave down $(-\infty, 0)$
3. Increasing $(-2, 1)$; decreasing $(-\infty, -2) \cup (1, \infty)$; concave up $(-\infty, -1) \cup (1, \infty)$; concave down $(-1, 1)$
4. Increasing $(-1, 1)$; decreasing $(\infty, -1) \cup (1, \infty)$; concave up $(-\infty, 0)$; concave down $(0, \infty)$