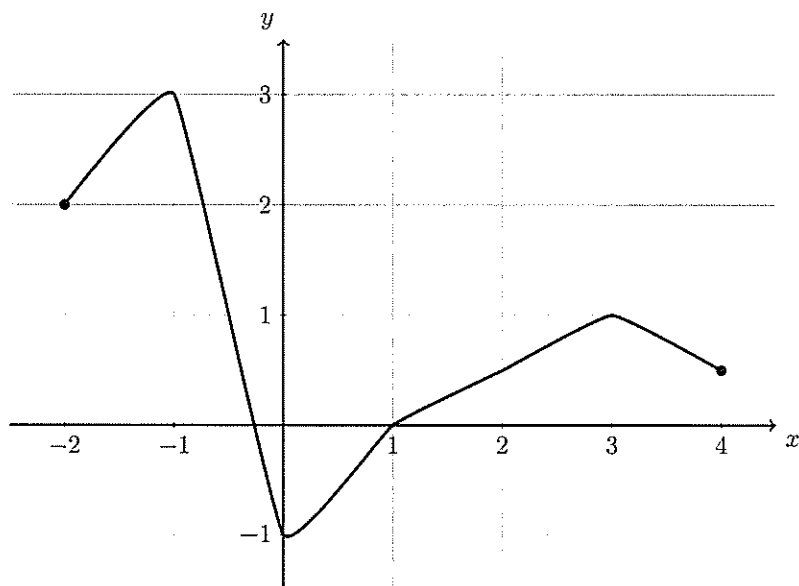


Name:

Worksheet 3, Math 1113

1. The questions below refer to the function whose graph is given below.



- (a) Determine the domain and range of the function.

Domain: $[-2, 4]$

Range: $[-1, 3]$

- (b) Determine the values of x where the function is increasing.

$(-2, -1)$, $(0, 3)$

- (c) Determine the values of x where the function is decreasing.

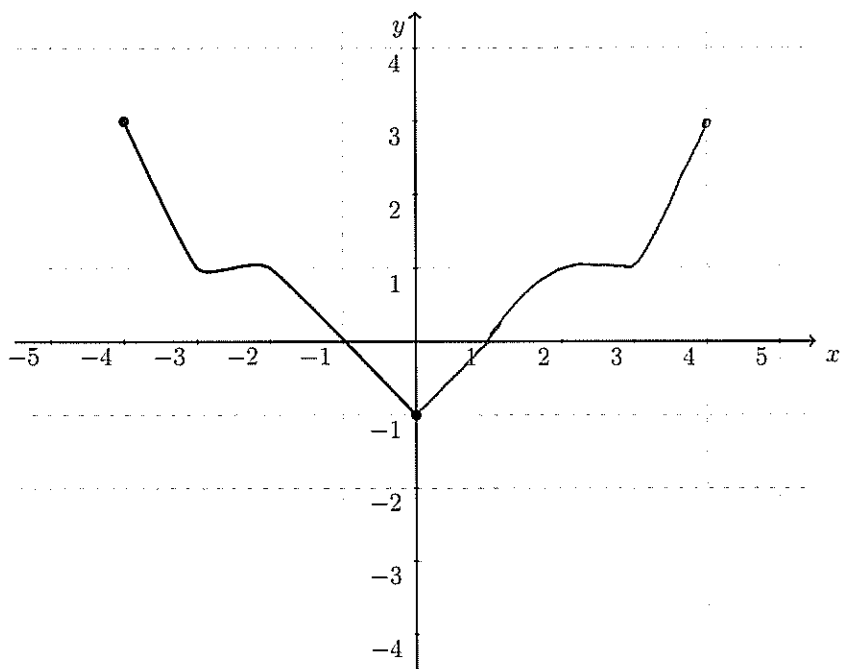
$(-1, 0)$, $(3, 4)$

- (d) Determine the relative minima and maxima of the function.

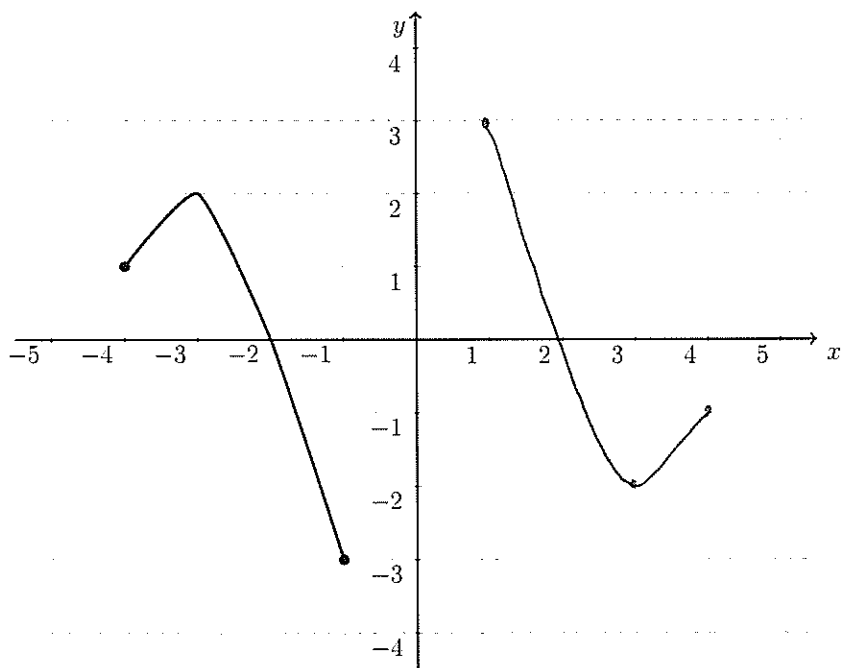
Relative minima: $(0, -1)$

Relative maxima: $(-1, 3)$, $(3, 1)$

2. Part of the graph of a function is given below. The function is even. Sketch the rest of the function.



3. Part of the graph of a function is given below. The function is odd. Sketch the rest of the function.



4. A small company builds a set of solar panels. The amount of electricity produced is proportional to the intensity of sun light. When the sunlight is bright, 100,000 lux, the system produces 4,000 watts. On one day of operation there is a good deal of cloud cover, and the amount of sunlight varies linearly from 6am to noon from 0 lux to 50,000 lux. After noon it varies linearly to 0 lux at 6pm. On the second day the cycle repeats, but the maximum amount of light is 100,000 lux. Determine the amount of power produced by the panel at any time during the two days. (Include night time!)

Let $L = \text{lux}$ $t = \text{time since } \text{noon of the first day}$

Then

$$L(t) = \begin{cases} 0, & 0 \leq t < 6 \\ \frac{50,000}{6}(t-6), & 6 \leq t \leq 12 \\ -\frac{50,000}{6}(t-12) + 50,000, & 12 \leq t < 18 \\ 0, & 18 \leq t < 30 \\ \frac{100,000}{6}(t-30), & 30 \leq t < 36 \\ -\frac{100,000}{6}(t-36) + 100,000, & 36 \leq t < 42 \\ 0, & 42 \leq t < 48 \end{cases}$$

