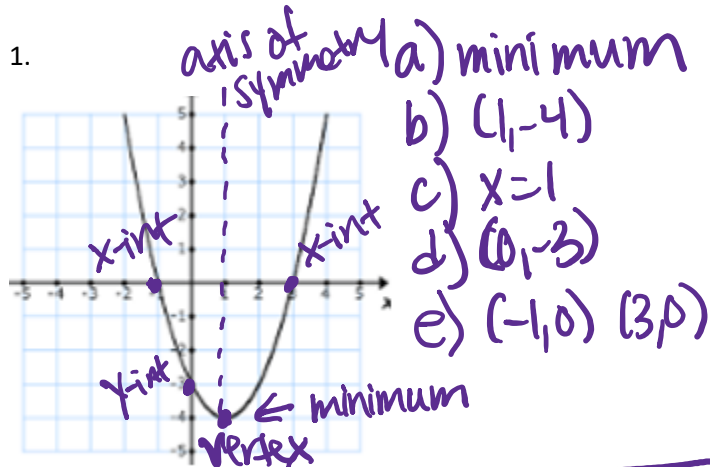


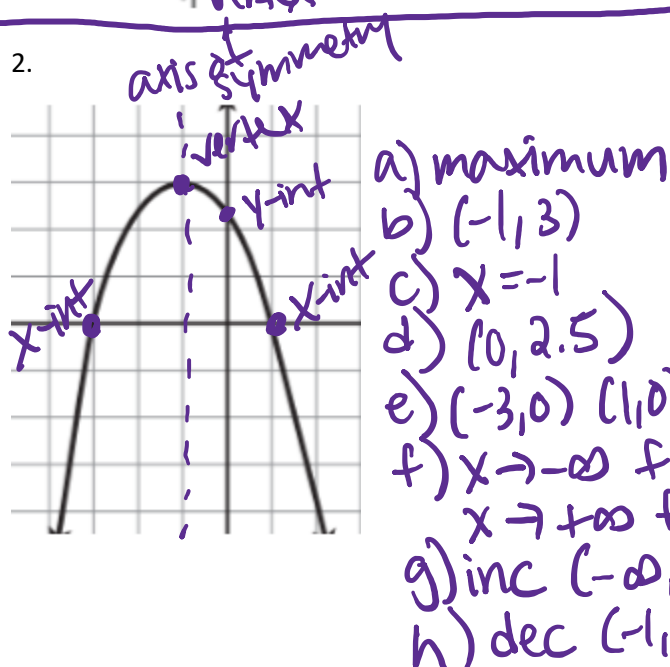
See answers below

For the problems below, answer the following questions:

- Does the parabola have a maximum or a minimum?
- What is the vertex?
- What is the axis of symmetry?
- What is the y-intercept?
- What are the x-intercepts?
- What is the end behavior?
- For what interval(s) is the graph increasing?
- For what interval(s) is the graph decreasing?
- What is the domain?
- What is the range?
- Where is the graph > 0 ?
- Where is the graph < 0 ?



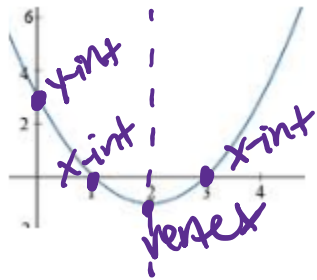
f) $x \rightarrow -\infty f(x) \rightarrow +\infty$
 $x \rightarrow +\infty f(x) \rightarrow +\infty$
 g) inc: $(1, \infty)$ or $x > 1$
 h) dec: $(-\infty, 1)$ or $x < 1$
 i) $(-\infty, \infty)$ all real #'s
 j) $[-4, \infty)$ or $y \geq -4$
 k) $(-\infty, -1) \cup (3, \infty)$



1) $x < -1$ or $x > 3$
 $(-1, 3)$ or $-1 < x < 3$

i) $(-\infty, \infty)$, all real #'s
 j) $(-\infty, 3]$ or $y \leq 3$
 k) $(-3, 1)$ or $-3 < x < 1$
 l) $(-\infty, -3) \cup (1, \infty)$
 or
 $x < -3 \cup x > 1$

3.



a) minimum

b) $(2, -1)$

c) $x = 2$

d) $(0, 3)$

e) $(1, 0)$ $(3, 0)$

f) $x \rightarrow -\infty f(x) \rightarrow +\infty$

$x \rightarrow +\infty f(x) \rightarrow +\infty$

g) inc $(2, \infty)$ or $x > 2$

h) dec $(-\infty, 2)$ or $x < 2$

i) $(-\infty, \infty)$

j) $[-1, \infty)$ or $x \geq -1$

k) $(-\infty, 1) \cup (3, \infty)$

$x < 1$ or $x > 3$

l) $(1, 3)$ or $1 < x < 3$

4.

X	-1	0	1	2	3	4	5
Y	0	-5	-8	-9	-8	-5	0

a) minimum

b) $(2, -9)$

c) $x = 2$

d) $(0, -5)$

e) $(-1, 0)$ $(5, 0)$

k) $(-\infty, -1) \cup (5, \infty)$

or $x < -1$ or $x > 5$

f) $x \rightarrow -\infty f(x) \rightarrow +\infty$

$x \rightarrow +\infty f(x) \rightarrow +\infty$

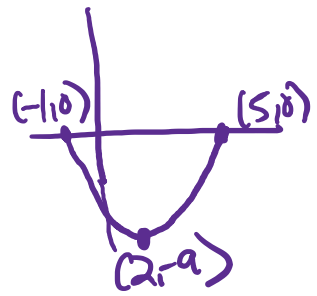
g) inc: $(2, \infty)$ or $x > 2$

h) dec $(-\infty, 2)$ or $x < 2$

i) $(-\infty, \infty)$

j) $(2, \infty)$ or $x \geq 2$

l) $(-1, 5)$ or $-1 < x < 5$



Answers:

1. a. minimum

b. (1, -4)

c. $x = 1$

d. (0, -3)

e. (-1, 0) (3, 0)

f. $x \rightarrow -\infty, y \rightarrow \infty; x \rightarrow \infty, y \rightarrow \infty$

g. $x > 1$

h. $x < 1$

i. all real numbers

j. $y \geq -4$

k. $x < -1 \cup x > 3$

l. $-1 < x < 3$

2. a. maximum

b. (-1, 3)

c. $x = -1$

d. (0, 2.5)

e. (-3, 0) (1, 0)

f. $x \rightarrow -\infty, y \rightarrow -\infty; x \rightarrow \infty, y \rightarrow -\infty$

g. $x < -1$

h. $x > -1$

i. all real numbers

j. $y \leq 3$

k. $-3 < x < 1$

l. $x < -3 \cup x > 1$

3. a. minimum

b. (2, -1)

c. $x = 2$

d. (0, 3)

e. $(1, 0) (3, 0)$

f. $x \rightarrow -\infty, y \rightarrow \infty; x \rightarrow \infty, y \rightarrow \infty$

g. $x > 2$

h. $x < 2$

i. all real numbers

j. $y \geq -1$

k. $x < 1 \cup x > 3$

l. $1 < x < 3$

4. a. minimum

b. $(2, -9)$

c. $x = 2$

d. $(0, -5)$

e. $(-1, 0) (5, 0)$

f. $x \rightarrow -\infty, y \rightarrow \infty; x \rightarrow \infty, y \rightarrow \infty$

g. $x > 2$

h. $x < 2$

i. all real numbers

j. $y \geq -9$

k. $x < -1 \cup x > 5$

l. $-1 < x < 5$