

Algebra 2 Honors Chapter 1a Review

1. Determine the domain and the range *without* graphing. State your answer in set notation. Then, state the maximum or minimum value.

a) $f(x) = 2x^2 + 8x - 1$

b) $f(x) = 9 - x^2$

2. List the number sets to which each number belongs.

a) 5

b) $\frac{\sqrt{3}}{2}$

c) π

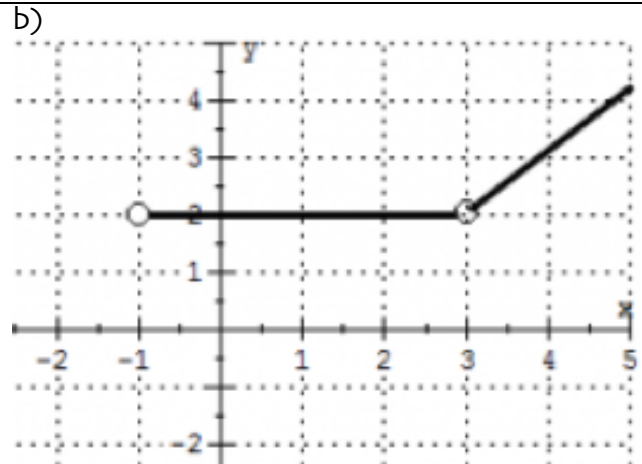
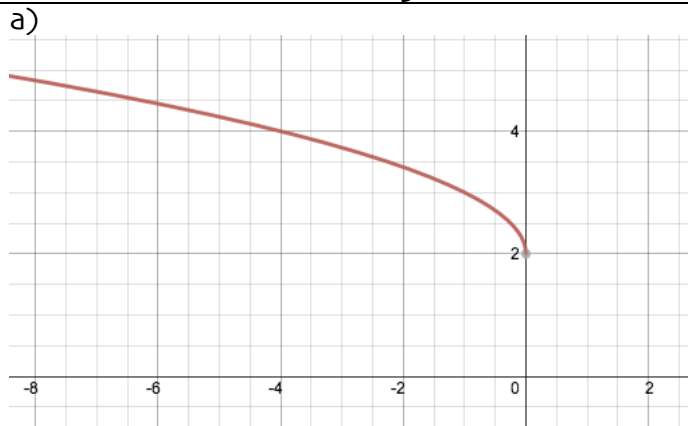
d) 1.495

3. Write each quadratic function in vertex form.

a) $f(x) = 4x^2 - 12x + 1$

b) $y = -x^2 + 8x - 16$

4. State the domain and range in interval notation.



5. Sketch. State the vertex, axis of symmetry, domain, and range in interval notation.

a) $y = \frac{1}{2}(x-5)(x-1)$

b) $y = -2x^2 + 4x + 1$

c) $y = 3(x+2)^2$

6. Factor completely.

a) $10x^2 - 6x - 35xy + 21y$

b) $25x^4 - 225$

c) $12x^2 + 4x - 40$

7. Express in set notation:

a) The set of integers

b) the set of natural numbers

8. Express in interval notation

a) at least 12

b) all numbers excluding 0

c) $|x| < 5$

ANSWERS

1.

a) $D: \{x | x \in \mathbb{R}\}$ $R: \{y | y \geq -9\}$; min value is -9

b) $D: \{x | x \in \mathbb{R}\}$; $R: \{y | y \leq 9\}$; max value is 9

2.

a) $\mathbb{R}, \mathbb{Q}, \mathbb{Z}, \mathbb{W}, \mathbb{N}, \mathbb{D}$

b) \mathbb{R}, \mathbb{I}

c) \mathbb{R}, \mathbb{I}

d) \mathbb{R}, \mathbb{Q}

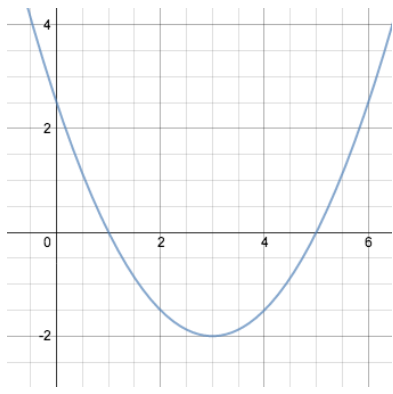
3.

a) $f(x) = 4\left(x - \frac{3}{2}\right)^2 - 8$

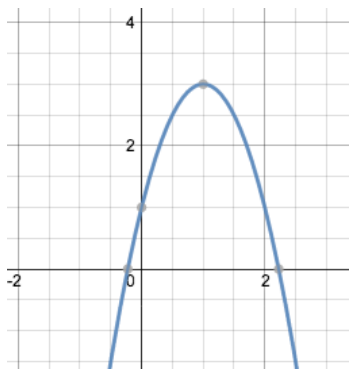
b) $y = -(x-4)^2$

4.
 a) Domain: $(-\infty, 0]$ Range: $[2, \infty)$ b) Domain: $(-1, 3) \cup (3, \infty)$ Range: $[2, \infty)$

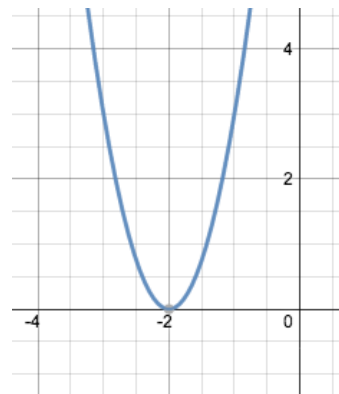
5.
 a) Vertex: $(3, -2)$; AOS: $x = 3$
 Domain: $(-\infty, \infty)$; Range: $[-2, \infty)$



b) Vertex: $(1, 3)$; AOS: $x = 1$
 Domain: $(-\infty, \infty)$; Range: $(-\infty, 3]$



c) Vertex: $(-2, 0)$; AOS: $x = -2$
 Domain: $(-\infty, \infty)$; Range: $[0, \infty)$



6.
 a) $(2x - 7y)(5x - 3)$ b) $25(x^2 + 3)(x^2 - 3)$ c) $4(3x - 5)(x + 2)$

7.
 a) $\{x | x \in \mathbb{Z}\}$ b) $\{x | x \in \mathbb{N}\}$

8.
 a) $[12, \infty)$ b) $(-\infty, 0) \cup (0, \infty)$ c) $(-5, 5)$