



Homework 2.2 – Analyzing Quadratic Functions

1. (1 point) —alfredLibrary/AUCI/chapter2/lesson2/quiz/question11pet.pg—

Find all real number solutions to the difference of squares equation

$$x^2 - 1 = 0$$

Solutions (separate by commas): $x =$ _____

2. (1 point) —alfredLibrary/AUCI/chapter2/lesson2/quad9p.pg—

The equation $5x^4 - 9x^3 - 4x^2 = 0$ has three real solutions A , B , and C where $A < B < C$.

$$A = \underline{\hspace{2cm}}$$

$$B = \underline{\hspace{2cm}}$$

$$C = \underline{\hspace{2cm}}$$

3. (1 point) —alfredLibrary/AUCI/chapter2/lesson2/quad10pet.pg—

The equation

$$x^4 - 10x^2 + 9 = 0$$

has four solutions. Enter them in increasing order:

$$x_1 = \underline{\hspace{2cm}}$$

$$x_2 = \underline{\hspace{2cm}}$$

$$x_3 = \underline{\hspace{2cm}}$$

$$x_4 = \underline{\hspace{2cm}}$$

(HINT: Begin by thinking of x^2 as the unknown and treat the original equation as a quadratic. Factor it as $(x^2 - a)(x^2 - b) = 0$, and then solve for x .)

4. (1 point) —alfredLibrary/AUCI/chapter2/lesson2/quad6p.pg—

The function $f(x) = -3x^2 + 4x - 8$ is increasing on the interval $(-\infty, A]$ and decreasing on the interval $[A, \infty)$, where A is the input at which f has a horizontal tangent line.

(a) Find A .

$$A = \underline{\hspace{2cm}}$$

(b) Does f have a minimum, a maximum, or neither at $x = A$? Enter your answer as MIN, MAX, or NEITHER.

Answer: _____

5. (1 point) —alfredLibrary/AUCI/chapter2/lesson2/quad4p.pg—

The profit in thousands of dollars for a computer company is given by $P(x) = -x^2 + 20x - 24$, where x is thousands of units produced. (For example, $P(2) = 8$ means that the profit is 8 thousand dollars when 2 thousand units are produced.)

(a) Determine how many thousands of units must be produced to yield maximum profit.

Maximum profit at _____ thousand units.

(b) Determine the maximum profit.

Maximum profit is _____ thousand dollars.