

Name _____

1. (2 points) Circle each set for which the number -3 is an element of that set. Note that it may be an element of more than one set.
 - The set of rational numbers
 - The set of irrational numbers
 - The set of real numbers
 - The set of integers
 - The set of whole numbers
 - The set of natural numbers

2. (2 points) Circle each set for which the number $\sqrt{2}$ is an element of that set. Note that it may be an element of more than one set.
 - The set of rational numbers
 - The set of irrational numbers
 - The set of real numbers
 - The set of integers
 - The set of whole numbers
 - The set of natural numbers

3. (2 points) Determine the value of the rational number which is a solution to the following equation.

$$3^{4x} = 9 \cdot (3^x)$$

4. (4 points) A ball is thrown upward from ground-level. Between the time that the ball is thrown and the time that the ball hits the ground, the height of the ball is given by the formula $h(t) = -16t^2 + 96t$, where t is the number of seconds since the ball is first thrown and $h(t)$ is measured in feet above ground-level.

(a) What is the height of the ball 2 seconds after it was thrown?

(b) At what time does the ball reach its maximum height?

(c) What is the ball's maximum height?

(d) At what time does the ball hit the ground?

(e) What is the domain of the function $h(t)$?

(f) What is the range of the function $h(t)$?