Math-19 Exam #1

Name: _____

This exam is closed book and notes. You may use a calculator; however, no cell phones or tablets are allowed. Show all work; there is no credit for guessed answers. All values should be exact with no decimals unless you are specifically asked for an approximate or decimal answer. Be careful to check for extraneous solutions.

1). Identify each subset of the real numbers and give an example of an element from each set. When you give an example for a particular set, that example must *not* be an element of any of the previous sets. So, for example, the example that you provide for $\mathbb{Z}$ must not also be in $\mathbb{N}$; in other words, it must be an element of $\mathbb{Z} - \mathbb{N}$.

subset	identify	example
$\mathbb{N}$	_____	_____
$\mathbb{Z}$	_____	_____
$\mathbb{Q}$	_____	_____
$\mathbb{R}$	_____	_____

2). Identify the following:

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ _____

$ax^2 + bx + c = 0$ _____

3). Simplify the following. Your final answer should have no radicals and no negative exponents. You may assume that all variable values are positive.

$$\left(\frac{x^7 y^{-4}}{\sqrt[3]{xy^4}} \right)^{-\frac{1}{4}}$$

4). Rationalize the denominator:

$$\frac{1}{\sqrt{x} - \sqrt{y}}$$

5). Solve by *completing the square*. There is no credit for using the quadratic formula. Make sure that you simplify your answer.

$$2x^2 - 7x - 1 = 0$$

6). Solve for x by using the least common denominator method:

$$\frac{1}{4(x+1)^2} - \frac{1}{2(x+1)} = \frac{1}{2}$$

7). Solve for x:

$$x^{\frac{1}{2}} + 3x^{-\frac{1}{2}} = 10x^{-\frac{3}{2}}$$

8). Solve for x:

$$x^4 + 2x^2 - 1 = 0$$

9). Solve for x:

$$3\,|x-2|+5=10$$

10). Solve for x:

$$\sqrt{2x+1}+1=x$$