

Write your answers on the line provided below each problem statement then attach your work on additional paper. If you cannot print this document, then you must write out each problem statement before your solution. You are allowed to use books, notes, websites, however all work must be your own and you must provide steps for credit. Answers without steps only earn 20 percent credit. Scan your work and post it as a pdf in Blackboard(10pts). See Announcements for further advice.

**Problem 1:** (8pts) Find the solution of  $(x+1)^2 = 7$ . If needed use  $i$  where  $i^2 = -1$  in your answer.

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**Problem 2:** (8pts) Solve  $x^2 + 34 = 6x$ . Simplify your answer, including any radicals and  $i$  as needed. Use integers or fractions for any numbers in the expression.

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**Problem 3:** (8pts) The width of a rectangle is 1 *ft* less than the length. The area is 30 *ft*<sup>2</sup>. Find the length and the width.

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**Problem 4:** (8pts) Find a quadratic equation which has solutions  $x = \pm 6i$ .

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**Problem 5:** (8pts) Given  $kx^2 - 19x + 26 = 0$  has solution  $x = 2$  find the value of  $k$ . In addition, find the other solution of the given equation.

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**Problem 6:** (8pts) Consider  $f(x) = 3x^2 + 6x + 10$ . Find the vertex of the graph  $y = f(x)$ . What is the minimum value attained by  $f(x)$  ?

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**Problem 7:** (8pts) Consider  $f(x) = x^2 + 2x - 8$ . Find the  $y$ -intercept and  $x$ -intercepts of  $y = f(x)$  if possible.

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**Problem 8:** (8pts) The graph of a quadratic function has  $(-1, 0)$  as well as its vertex at  $(9, -1)$ . Find the formula for this quadratic function.

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