Exam 1

Name_____

Answer the questions in the spaces provided. Feel free to use the back of your test for scratch work

1. What are the restrictions on x for the following equation:
   Hint: *"The restrictions on x"*, are the values x **CAN NOT** be.
   (a) $\frac{1}{x-1} = \frac{1}{2} - \frac{x-5}{x+4}$

2. Solve for x in the the following equations:

   (a) $x^2 + x - 6 = 0$

   $\frac{-5}{x^2-9} + 3 = 4$

3. Solve for the indicated variable:

   (a) $y^2 - 9 = 3xy - 9x$, for x

   $y - 2 = \frac{x-4}{y+2}$, for y

4. Compute the following:

   (a) $\frac{1}{5+2i}$

   $(3+4i)^2$

5. Solve using any technique:

(a) $x^2 + 32 = 36$

$2x^2 + 10 = x^2 + 10x - 15$

6. Apply the Quadratic Formula to solve:

(a) $3x(x-1) = 4$

$2x^2 - 3x - 5 = 0$

7. Solve the following:

   (a) While camping, Tori hikes up a near by mountain. When she returns to her campsite later that night, she finds that the trip took her 6hrs going up the mountain, and 3hrs going down. If she was traveling 3mph faster going down the mountain than she was going up it, how fast was she going in both direstions? Hint: you should have two answers. One for her speed going up the mountain AND one coming back down.

8. Write a model for the following:

   (a) A dance studio offers standard lessons for \$10/hr and personal lessons for \$15/hr. Tod decides he's going to take a combination of the two types of lessons. Write a model for the cost of Tod's lessons.

9. Bonus problems:

   (a) Show the derivation of the Quadriatic Formula
   (8% Extra Credit)

   (b) Draw a dank math meme
   (2% Extra Credit)