Name: Solution

MAC1105 Section 1A26
Quiz 6

Please show all of your work in a NEAT and ORGANIZED fashion.

1. (3 points) Divide and write your answer in standard form $a + bi$.

$$\left(\frac{8-6i}{2-i}\right) \cdot \frac{(2+i)}{(2+i)} =$$

$$\frac{16+8i-12i-6i^2}{4-i^2} =$$

$$\frac{16-4i+6}{4+1} =$$

$$\frac{22-4i}{5} = \frac{22}{5} - \frac{4}{5}i$$

2. (3 points) Evaluate the discriminant of the quadratic equation. Use the value of the discriminant to determine whether the quadratic equation has 2 real solutions, 1 repeated real solution, or 2 nonreal complex solutions.

$$16x^2 = 8x - 1$$

$16x^2 - 8x + 1 = 0$ $\quad a = 16,\ b = -8,\ c = 1$

discriminant $= b^2 - 4ac$

$= (-8)^2 - 4(16)(1)$

$= 64 - 64$

$= 0 \longrightarrow$ there is <u>1</u> repeated <u>real</u> solution

3. (4 points) Solve the rational equation.

$$\frac{4}{x+3} + \frac{x}{x-5} = 1$$

Domain: $x \neq -3, 5$

LCD: $(x+3)(x-5)$

$$\cancel{(x+3)}(x-5)\left(\frac{4}{\cancel{x+3}}\right) + (x+3)\cancel{(x-5)}\left(\frac{x}{\cancel{x-5}}\right) = 1(x+3)(x-5)$$

$$4(x-5) + (x+3)(x) = x^2 - 2x - 15$$

$$4x - 20 + \cancel{x^2} + 3x = \cancel{x^2} - 2x - 15$$

$$9x = 5$$

$$x = \frac{5}{9}$$