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Quiz 5 Solutions
MAC 1147.3079, Fall 2015
Thursday, October 8, 2015

Show all relevant work to support your answer. A correct answer without supporting work will not earn the points. **Problems 3 and 4 are on the back.**

1. (1 point) What is your favorite genre of music? (Hint: There is no wrong answer)

1. _____

2. (4 points) Given the function $f(x) = \dfrac{(3x-1)(2-x)}{(x+2)(x-7)}$, determine the following:

   (a) All asymptotes of $f(x)$.

   Solution: First note that nothing in $f(x)$ cancels. Hence there are vertical asymptotes at $x = -2$, $x = 7$ and a horizontal asymptote at $y = -3$.

   (b) The zeros of $f(x)$.

   (b) _____

   Solution: The zeros are found when $f(x) = 0$, or $(3x-1)(2-x) = 0$. Hence, there are zeros at $x = \frac{1}{3}, 2$.

3. (2 points) Let $f(x) = 2x^2 + 4x + c$ where $c > 2$. The function f has how many real zeros?

   A. The function has no real zeros

   B. The function has ONE real zero

   C. The function has TWO real zeros

   D. More information is required

Solution: Using the quadratic equation, we get $\frac{-2 \pm \sqrt{16 - 8c}}{4}$. Observe that when $c > 2$, we get negative numbers inside the square root. Hence there are no real zeros when $c > 2$.

4. (3 points) Find the product of $(i - 2)(4 + 7i)$.

Solution: Foiling the product, we get $4i + 7i^2 - 8 - 14i$. Noting that $i^2 = -1$, the solution is then $-10i - 15$.