Math 096: Final Examination

Spring 2013 Total= 50 points Time=120 minutes

Instructions:

1. Cell phones and any other electronic devices **must be put off and not within your reach**.
2. Students are expected to respect the Academic Code of Honor.
3. All work must be shown. Answers with no justification are not acceptable.
4. Your work must clearly show the question number and section, for example, 1a.
5. Number your answer sheets, that is, 1 of 3, 2 of 3, etc.
6. Calculators are **not** allowed.
7. Students will not be allowed to enter after the first 30 minutes of the exam or leave in the first 30 minutes of the exam.

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1. Simplify the following expressions as much as possible. (4)

   (a) $\dfrac{a^3(ab)^{-2}(\frac{a}{b})^{-2}}{b^2}$

   (b) $x(1-2x)+2(x^2-x)+x$

2. Find the quotient and remainder polynomial on dividing $3x^4+x^3+1$ by x^2-1. (3)

3. Solve the following. (6)

   (a) $|2x-1|=3$

   (b) $|x-2|+1\geq 3$

See back side of sheet for remaining questions

(c) $3x - 2(x+1) < -x + 3(x+2)$

4. Factor the expression on the left hand side of the equation and solve the equation. (6)

   (a) $x^3 + x^2 - 2x = 0$

   (b) $x^3 - 7x^2 = 0$

5. Solve the following. (12)

   (a) $x + \dfrac{6}{x-3} = \dfrac{2x}{x-3}$

   (b) $\dfrac{4}{x+1} = x + 1$

   (c) $(2x+5)^3 - 6 = 21$

6. Solve the following. (12)

   (a) $x - 1 = \sqrt{7 - x}$

   (b) $x^2 + x - 2 = -1 - x$

   (c) $\sqrt{3x+4} - \sqrt{x+2} = 2$

7. (a) Find the equation of the line with slope 2 and passing through the point $(1, -2)$. (2)

   (b) Sketch the graph of $2x - 3y = 2$ showing clearly the x and y intercepts. (2)

8. Jack is twice as old as Lacy. In three years the sum of their ages will be 54. How old are they now? (3)