Math 103.E45
Summer 2011
Exam #3

Name:

1. [10 pts. each] Write each in lowest terms.

   (a) $\dfrac{v^2 - 36}{5v + 30}$

   (b) $\dfrac{8x^2 - 10x - 3}{8x^2 - 6x - 9}$

2. [10 pts. each] Multiply or divide as indicated, and write in lowest terms.

   (a) $\dfrac{u^3v^2}{15u^2v^4} \div \dfrac{12u^4v^2}{5v^{11}}$

   (b) $\dfrac{z^2 - 1}{6z} \cdot \dfrac{2}{1 - z}$

   (c) $\dfrac{t^2 - 49}{t^2 + 4t - 21} \cdot \dfrac{t^2 + 8t + 15}{t^2 - 2t - 35}$

3. [10 pts. each] Add or subtract as indicated, and write in lowest terms.

   (a) $\dfrac{7}{3y} + \dfrac{9}{4y}$

   (b) $\dfrac{1}{x + 2} - \dfrac{1}{x - 3}$

   (c) $\dfrac{5x}{x - 3} + \dfrac{2}{x} + \dfrac{6}{x^2 - 3x}$

4. [10 pts.] Simplify the complex fraction:

$$\frac{4 - \dfrac{1}{p}}{9 + \dfrac{5}{p}}$$

5. [10 pts. each] Solve each equation.

   (a) $2 - \dfrac{5}{2x} = \dfrac{2x}{x + 1}$

   (b) $\dfrac{2x}{x - 3} + \dfrac{4}{x + 3} = \dfrac{-24}{x^2 - 9}$

6. [10 pts.] Solve $\dfrac{1}{p} + \dfrac{1}{q} = \dfrac{1}{f}$ for p.

7. [15 pts.] A plane averaged 500 mph on a trip going east, but only 350 mph on the return trip. The total flying time in both directions was 8.5 hours. What was the one-way distance?

8. [10 pts.] Tom and Jerry are laying a hardwood floor. Working alone, Jerry can do the job in 20 hours. If the two of them work together, they can complete the job in 12 hours. How long would it take Tom to lay the flooring working alone?

9. [10 pts. each] Solve each system of equations. If the system is inconsistent or has dependent solutions, say so.

   (a)
$$\begin{cases} 3x - 2y = 7 \\ 2x + y = 3 \end{cases}$$

   (b)
$$\begin{cases} \frac{1}{4}x - \frac{1}{5}y = 9 \\ 5x - y = 0 \end{cases}$$