

EXAM 7 REVIEW

Math 200 – Fall 2006

The seventh exam will be on Thursday, November 30.

The exam will cover Sections 8.1 – 8.3 and 8.6

All homework from Chapter 8 is due at the exam (late assignments are NOT accepted).

You may use your calculator on this exam.

You may NOT use your notes, homework, book, or neighbors on this exam. You do NOT get a $3\frac{1}{2} \times 5$ “cheat-sheet” for this exam.

Below is a review for this exam. Anything on the review could possibly be on the exam. The exam will be shorter than the review.

CHAPTER 8 REVIEW EXERCISES

In Exercises 1-4, find all numbers for which each rational expression is undefined. If the rational expression is defined for all real numbers, so state.

1. $\frac{5x}{6x-24}$

2. $\frac{x+3}{(x-2)(x+5)}$

3. $\frac{x^2+3}{x^2-5x+2}$

4. $\frac{7}{x^2+81}$

In Exercises 5-12, simplify each rational expression. If the rational expression cannot be simplified, so state.

5. $\frac{16x^3}{12x}$

6. $\frac{x^2-4}{x-2}$

7. $\frac{x^2+2x}{x+2}$

8. $\frac{x^2+3x-18}{x^2-36}$

9. $\frac{x^2-4x-5}{x^2+8x+7}$

10. $\frac{y^2+2y}{y^2+4y+4}$

11. $\frac{x^2}{x^2+4}$

12. $\frac{2x^2-18y^2}{3y-x}$

In Exercises 13-17, multiply as indicated.

13. $\frac{x^2-4}{12x} \cdot \frac{3x}{x+2}$

14. $\frac{5x+5}{6} \cdot \frac{3x}{x^2+x}$

15. $\frac{x^2+6x+9}{x^2-4} \cdot \frac{x-2}{x+3}$

16. $\frac{y^2-2y+1}{y^2-1} \cdot \frac{2y^2+y-1}{5y-5}$

17. $\frac{2y^2+y-3}{4y^2-9} \cdot \frac{3y+3}{5y-5y^2}$

In Exercises 18-22, divide as indicated.

18. $\frac{x^2+x-2}{10} \div \frac{2x+4}{5}$

19. $\frac{6x+2}{x^2-1} \div \frac{3x^2+x}{x-1}$

20. $\frac{1}{y^2+8y+15} \div \frac{7}{y+5}$

21. $\frac{y^2+y-42}{y-3} \div \frac{y+7}{(y-3)^2}$

22. $\frac{8x+8y}{x^2} \div \frac{x^2-y^2}{x^2}$

In Exercises 23-28, add or subtract as indicated. Simplify the result, if possible.

23. $\frac{4x}{x+5} + \frac{20}{x+5}$

24. $\frac{8x-5}{3x-1} + \frac{4x+1}{3x-1}$

25. $\frac{3x^2+2x}{x-1} - \frac{10x-5}{x-1}$

26. $\frac{6y^2-4y}{2y-3} - \frac{12-3y}{2y-3}$

27. $\frac{x}{x-2} + \frac{x-4}{2-x}$

28. $\frac{x-5}{y-3} - \frac{x}{3-x}$

In Exercises 48-55, solve each rational equation. If an equation has no solution, so state.

48. $\frac{3}{x} - \frac{1}{6} = \frac{1}{x}$

49. $\frac{3}{4x} = \frac{1}{x} + \frac{1}{4}$

50. $x + \frac{6}{x}$

51. $4 - \frac{x}{x+5} = \frac{5}{x+5}$

52. $\frac{2}{x-3} = \frac{4}{x+3} + \frac{8}{x-9}$

53. $\frac{2}{x} = \frac{2}{3} + \frac{x}{3}$

54. $\frac{13}{y-1} - 3 = \frac{1}{y-1}$

55. $\frac{1}{x+3} - \frac{1}{x-1} = \frac{x-1}{x^2+2x-3}$

56. Park rangers introduce 50 elk into a wildlife preserve. The formula

$$P = \frac{250(3t+5)}{t+25}$$

models the elk population, P , after t years. How many years will it take for the population to increase to 125 elk?

57. The formula

$$S = \frac{C}{1-r}$$

describes the selling price, S , of a product in terms of its cost to the retailer, C , and its markup, r , usually expressed as a percent. A small television cost a retailer \$140 and was sold for \$200. Find the markup. Express the answer as a percent.

$$58. \frac{3y-2}{5} = \frac{6y-5}{11}$$

$$59. \frac{2r+8}{4} = \frac{3r-9}{3}$$

$$60. \frac{5k+1}{6} = \frac{3k-2}{3}$$

$$61. \frac{2}{m} = \frac{m}{5m+12}$$

$$62. \frac{x}{4-x} = \frac{2}{x}$$

$$63. \frac{m}{8m+3} = \frac{1}{3m}$$

$$64. \frac{x}{5} = \frac{5}{x}$$

Review Exercises

1. $x = 4$ 2. $x = 2$ and $x = -5$ 3. $x = 1$ and $x = 2$ 4. defined for all real numbers 5. $\frac{4x}{3}$ 6. $x + 2$ 7. x^2 8. $\frac{x-3}{x-6}$
 9. $\frac{x-5}{x+7}$ 10. $\frac{y}{y+2}$ 11. cannot be simplified 12. $-2(x+3y)$ 13. $\frac{x-2}{4}$ 14. $\frac{5}{2}$ 15. $\frac{x+3}{x+2}$ 16. $\frac{2y+1}{5}$ 17. $\frac{-3(y+1)}{5y(2y+3)}$
 18. $\frac{x-1}{4}$ 19. $\frac{2}{x(x+1)}$ 20. $\frac{1}{7(y+3)}$ 21. $(y-3)(y-6)$ 22. $\frac{8}{x-y}$ 23. 4 24. 4 25. $3x-5$ 26. $3y+4$
 27. $\frac{a}{x-2}$ 28. ~~$\frac{1}{x-2}$~~
 29. ~~$\frac{1}{x-2}$~~ 30. ~~$\frac{1}{x-2}$~~ 31. ~~$\frac{1}{x-2}$~~ 32. ~~$\frac{1}{x-2}$~~ 33. ~~$\frac{1}{x-2}$~~ 34. ~~$\frac{1}{x-2}$~~ 35. ~~$\frac{1}{x-2}$~~ 36. ~~$\frac{1}{x-2}$~~ 37. ~~$\frac{1}{x-2}$~~ 38. ~~$\frac{1}{x-2}$~~ 39. ~~$\frac{1}{x-2}$~~ 40. ~~$\frac{1}{x-2}$~~ 41. ~~$\frac{1}{x-2}$~~ 42. ~~$\frac{1}{x-2}$~~ 43. ~~$\frac{1}{x-2}$~~ 44. ~~$\frac{1}{x-2}$~~ 45. ~~$\frac{1}{x-2}$~~ 46. ~~$\frac{1}{x-2}$~~ 47. ~~$\frac{1}{x-2}$~~ 48. ~~$\frac{1}{x-2}$~~ 49. ~~$\frac{1}{x-2}$~~ 50. ~~$\frac{1}{x-2}$~~ 51. ~~$\frac{1}{x-2}$~~ 52. ~~$\frac{1}{x-2}$~~ 53. ~~$\frac{1}{x-2}$~~ 54. ~~$\frac{1}{x-2}$~~ 55. ~~$\frac{1}{x-2}$~~ 56. 3 yr 57. 30%

58. $y = -1$

59. $r = 10$

60. $k = 5$

61. $m = -2$ or $m = 12$

62. $x = -4$ or $x = 2$

63. $m = 3$ or $m = -\frac{1}{3}$

64. $x = 5$ or $x = -5$