To prepare for the upcoming final exam, it is advisable that you begin as early as possible. Pacing your review so that information is built slowly, every day, will strengthen your skills and build confidence before the exam. Remember to focus also on the newly covered topics in the last 3 chapters. The attached practice exam should be a guide to reveal areas you need to review more deeply, but not used as a guaranteed preparation for the exam. Notes, homework, quizzes, and the text are other resources that will best prepare you for the final.

Remember to bring in a non-graphing calculator, a 5×7 card containing all information you find helpful, blank scratch paper, and well sharpened pencils and erasers.

The scheduled day and time of the exam is 7:00 – 9:50 am on Tuesday, 6/1. Note the time difference from the normal class starting time. Use extra time to review and catch simple mistakes.

If you want to receive information about your grade, you may bring in a self-addressed stamped envelope, and I can mail you the results as soon as I am finished grading—typically in about 2-3 days (allow a week for mail to be processed).

Please feel free to ask questions if you need help. Do your best!
Final Exam-Review
Math 154

Use separate pieces of paper to solve the problems. This handout does not contain enough space for the work needed. This review does not need to be handed in.

Solve the following.

1. \(5(x + 3) = -4(x - 5) + 13\)

2. \(\frac{3}{4}n - \frac{1}{5} = \frac{2}{3}n\)

3. \(x + 6 \geq 9x + 30\)

4. Tarrach and Associates plan on increasing the size of its headquarters by 20%. If the new headquarters is to be 14,200 square feet, determine the size of the present headquarters. (round your answer to the nearest foot.)

5. Find the slope of the line passing through the points (-5, 6) and (2, -7)

6. The temperature \(F\) in Fahrenheit is given by the following formula, where \(C\) is the temperature in Celsius.
   \[F = \frac{9}{5}C + 32\]
   a) Find 3 ordered pairs satisfying the equation, given the values for \(C\)
   b) Plot the 3 ordered pairs and graph the line passing through the points, where the horizontal line (\(x\) axis) represents Celsius, and the vertical (\(y\) axis) represents Fahrenheit.
   c) Show from the graph what the temperature in Fahrenheit would be if the temperature in Celsius is 40°.
   d) Use the formula to prove your results in step “c”.

7. \(2k(5k^2)^2\)

8. \(\left(\frac{y^7}{y^3}\right)^4\)

9. \((7m^2 + 9m - 5) - (-5m^2 + 2m - 1)\)

10. \((7x + 1)(7x - 1)\)

11. Divide using long division
   \[2x + 3\sqrt{6x^2 - 5x + 5}\]

12. Factor the following
   \[3x^2 - 9x - 12\]
   \[2x^2y - 18y\]

13. Find \((4y + 3)^2\)

Solve the quadratic equations using factoring.

14. \(x^2 + 12x = -20\)

15. \(3x(x - 3) = 30\)

16. The area of a rectangle is 84 square inches. Determine the length and the width if the length is 2 inches less than twice the width.

Perform the operations

17. \[\frac{5}{x^2 - 5x} - \frac{x}{5x - 25}\]
18. \(\frac{4x + 2x}{y} \cdot \frac{1}{xy}\)

19. Solve the rational equation.
\[
\frac{1}{x} + \frac{1}{3x} = \frac{20}{9}
\]

20. Find the slope and the y-intercept of the equation, and then graph the line.

\[3x - 5y = 20\]

21. Solve the system using substitution.

\[3x + 2y = 14\]
\[x - y = 8\]

22. Solve the system using the addition method.

\[2x + y = 11\]
\[x + 3y = 18\]

23. A group of 10 students met at a local coffee shop to study. They each ordered specialty coffees. Some were large, and some small. If each large cost $2.50, and each small cost $1.75, and the total bill came to $22.75, how many of each coffee drinks were ordered?

27. \(\sqrt{9r} \div \sqrt{5}\)

28. \(\sqrt{x + 1} = 8\)

29. \(\sqrt{3x + 4} = x - 2\)

30. \(y^2 + 1 = 28\)

31. \((x - 3)^2 = 15\)

32. \(x^2 - 4x = 60\)

33. \(2n^2 - 6n - 9 = 0\)

34. A model rocket is launched from a playing field. The height, \(h\), of the rocket above the ground after \(t\) seconds from launch can be found by the formula

\[h = -16t^2 + 90t\]

When will the rocket be at the height of 80 feet?

35. Use long division to find

\( \left(x^3 - 13x - 12\right) \div (x - 4)\)

Simplify the radical expressions.

24. \(\sqrt{90k^{12}p^{17}}\)

25. \(\sqrt{8x^2y} \cdot \sqrt{10xy}\)

26. \(\sqrt{48} + \sqrt{75} + 2\sqrt{3}\)