EXAM 8 REVIEW

Math 200 – Spring 2007

The eighth exam will be on Wednesday, May 9.

The exam will cover Sections 9.1, 9.2, and 10.1

All homework from Chapters 9 and 10 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 $3^1/_2$ X 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 9 REVIEW EXERCISES

In Exercises 1–6, find the indicated root, or state that the expression is not a real number.

1. $\sqrt{121}$
2. $-\sqrt{121}$
3. $\sqrt{-121}$
4. $\sqrt[3]{\frac{8}{125}}$
5. $\sqrt[5]{-32}$
6. $-\sqrt[4]{81}$

In Exercises 7–8, use a calculator to approximate each square root. Round to three decimal places.

7. $\sqrt{75}$
8. $\sqrt{398 - 5}$
9. The formula $P = 26.5\sqrt{t}$ models the thousands of people over age 85, P, in Arizona t years after 1990. Find the over-85 population in 1999.
10. Use the model in Exercise 9 to describe what is happening to Arizona's over-85 population over time.
11. The formula

$$d = \sqrt{\frac{3h}{2}}$$

models the distance, d, in miles, that you can see to the horizon at a height of h feet. A 1575-foot skyscraper that is being built in Hong Kong will be the world's tallest building. How far to the horizon will visitors be able to see from the top of the building? Use a calculator and round to the nearest mile.

In Exercises 12–19, simplify each expression.

12. $\sqrt{54}$
13. $6\sqrt{20}$
14. $\sqrt{63x^2}$
15. $\sqrt{48x^3}$
16. $\sqrt{x^8}$
17. $\sqrt{75x^9}$
18. $\sqrt{45x^{23}}$
19. $\sqrt[3]{24}$

In Exercises 20–25, multiply and, if possible, simplify.

20. $\sqrt{7} \cdot \sqrt{11}$
21. $\sqrt{3} \cdot \sqrt{12}$
22. $\sqrt{5x} \cdot \sqrt{10x}$
23. $\sqrt{3x^2} \cdot \sqrt{4x^3}$
24. $\sqrt[3]{6} \cdot \sqrt[3]{9}$
25. $\sqrt{\frac{5}{2}} \cdot \sqrt{\frac{3}{8}}$

In Exercises 26–33, simplify using the quotient rule.

26. $\sqrt{\frac{121}{4}}$
27. $\sqrt{\frac{7x}{25}}$
28. $\sqrt{\frac{18}{x^2}}$
29. $\frac{\sqrt{200}}{\sqrt{2}}$
30. $\frac{\sqrt{96}}{\sqrt{3}}$
31. $\frac{\sqrt{72x^8}}{\sqrt{x^3}}$
32. $\sqrt[3]{\frac{5}{64}}$
33. $\sqrt[3]{\frac{40}{27}}$

Review Exercises

1. 11 2. −11 3. not a real number 4. $\frac{2}{5}$ 5. −2 6. −3 7. 8.660 8. 19.824 9. 79.5 thousand people

10. Answers will vary. example: It's increasing, but the rate of increase is slowing down. 11. 49 mi 12. $3\sqrt{6}$

13. $12\sqrt{5}$ 14. $3x\sqrt{7}$ 15. $4x\sqrt{3x}$ 16. x^4 17. $5x^4\sqrt{3x}$ 18. $3x^{11}\sqrt{5x}$ 19. $2\sqrt[3]{3}$ 20. $\sqrt{77}$ 21. 6 22. $5x\sqrt{2}$

23. $2x^2\sqrt{3x}$ 24. $3\sqrt[3]{2}$ 25. $\frac{\sqrt{15}}{4}$ 26. $\frac{11}{2}$ 27. $\frac{\sqrt{7x}}{5}$ 28. $\frac{3\sqrt{2}}{x}$ 29. 10 30. $4\sqrt{2}$ 31. $6x^2\sqrt{2x}$ 32. $\frac{\sqrt[3]{5}}{4}$

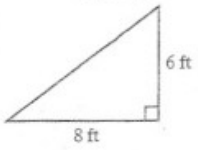
CHAPTER 10 REVIEW EXERCISES

In Exercises 1–8, solve each quadratic equation by the square root property. If possible, simplify radicals or rationalize denominators.

1. $x^2 = 64$
2. $x^2 = 17$
3. $2x^2 = 150$
4. $(x - 3)^2 = 9$
5. $(y + 4)^2 = 5$
6. $3y^2 - 5 = 0$
7. $(2x - 7)^2 = 25$
8. $(x + 5)^2 = 12$

In Exercises 9–11, use the Pythagorean Theorem to find the missing length in each right triangle. Express the answer in radical form and simplify, if possible.

9.



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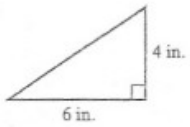

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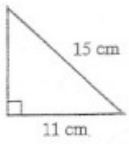
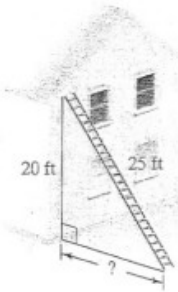


Use the Pythagorean Theorem to solve Exercises 12–13.

12. How far away from the building shown in the figure is the bottom of the ladder?



13. A vertical pole is to be supported by three wires. Each wire is 13 yards long and is anchored 5 yards from the base of the pole. How far up the pole will the wires be attached?
14. The weight of a human fetus is modeled by the formula $W = 3t^2$, where W is the weight, in grams, and t is the time, in weeks, $0 \le t \le 39$. After how many weeks does the fetus weigh 1200 grams?
15. The distance, d, in feet, that an object falls in t seconds is modeled by the formula $d = 16t^2$. If you dive from a height of 100 feet, how long will it take to hit the water?

In Exercises 16–17, find the distance between each pair of points. Express answers in simplest radical form and, if necessary, round to two decimal places.

16. $(-3, -2)$ and $(1, -5)$
17. $(3, 8)$ and $(5, 4)$

Review Exercises

1. 8 and -8 2. $\sqrt{17}$ and $-\sqrt{17}$ 3. $5\sqrt{3}$ and $-5\sqrt{3}$ 4. 6 and 0 5. $-4 + \sqrt{5}$ and $-4 - \sqrt{5}$ 6. $\frac{\sqrt{15}}{3}$ and $-\frac{\sqrt{15}}{3}$ 7. 6 and 1
8. $-5 + 2\sqrt{3}$ and $-5 - 2\sqrt{3}$ 9. 10 ft 10. $2\sqrt{13}$ in. 11. $2\sqrt{26}$ cm 12. 15 ft 13. 12 yd 14. 20 weeks 15. 2.5 sec