

M123-Intermediate Algebra
Review for sections 10.1, 10.3-10.8

Note: This review sheet was created to review the concepts presented in your text. Each instructor may have other problems you should review to prepare for quizzes and exams in your section of the course.

1. Simplify. (Section 10.1)

a) $\sqrt{\frac{81}{64}}$ b) $\sqrt[3]{\frac{27x^6}{64y^3}}$ c) $\sqrt{9x^2 - 24x + 16}$

d) $\sqrt[11]{(a+b)^{113}}$ e) $\sqrt[8]{a^{48}b^{24}c^{16}}$

4. Multiply and, if possible, simplify. (Section 10.3)

a) $\sqrt[3]{4} \cdot \sqrt[3]{16}$ b) $\sqrt[5]{(x-2)^4} \cdot \sqrt[5]{(x-2)^6}$

5. Simplify by factoring. (Section 10.3)

a) $\sqrt{63}$ b) $\sqrt[4]{48a^5b^7}$ c) $\sqrt{m^{19}n^{20}}$ d) $\sqrt[3]{54a^3b^9c^{10}}$

6. Perform the indicated operation and, if possible, simplify. Write all answers using radical notation. (Section 10.4)

a) $\frac{\sqrt[3]{60xy^3}}{\sqrt[3]{10x}}$ b) $\frac{\sqrt{75x}}{2\sqrt{3}}$ c) $\sqrt[4]{\frac{48a^{11}}{c^8}}$

d) $\frac{\sqrt[5]{64a^{11}b^{28}}}{\sqrt[5]{2ab^{-2}}}$ e) $\sqrt[3]{\frac{27a^4}{8b^3}}$ f) $\frac{\sqrt[4]{405a^7b}}{\sqrt[4]{5a^2b^5}}$

7. Rationalize each denominator. Assume all variables represent positive numbers. (Section 10.4 & 10.5)

a) $\frac{6\sqrt{5}}{5\sqrt{3}}$ b) $\frac{\sqrt{7a}}{\sqrt{18}}$ c) $\sqrt[3]{\frac{2b}{3a^3}}$

d) $\frac{3\sqrt{2}}{4-\sqrt{5}}$ e) $\frac{2}{3+\sqrt{5}}$ f) $\frac{\sqrt{2}-\sqrt{5}}{\sqrt{7}+\sqrt{3}}$

8. Simplify. (Section 10.5)

a) $8\sqrt{5} + 9\sqrt{5}$ b) $\sqrt{4x^3} + 5x\sqrt{9x}$ c) $\sqrt{16z - 64} - \sqrt{z - 4}$

d) $\sqrt{2}(3\sqrt{10} - 2\sqrt{2})$ e) $(\sqrt{2} + 3\sqrt{5})(4\sqrt{5} - 7\sqrt{2})$

9. Solve the equation. (Section 10.6)

a) $3 + \sqrt{5 - x} = x$ b) $x^{\frac{1}{4}} - 21 = -18$ c) $\sqrt[5]{3x + 5} + 4 = 6$

10. The shortest leg of a 30-60-90 right triangle is 7cm long. What are the length of the other two sides of the triangle? (Section 10.7)

11. A referee jogs diagonally from one corner of a 50-ft by 90-ft basketball court to the far corner. How far does the referee jog? (Section 10.7)

12. A skate-park jump has a ramp that is 6-ft long and is 2-ft high. How long is the base of the jump? (Section 10.7)

13. Express in terms of i . (Section 10.8)

a) $\sqrt{-75}$ b) $\sqrt{-48}$

14. Add or Subtract. Put your answer in standard form. (Section 10.8)

a) $(5 + 3i) + (-2 - 10i)$ b) $(-3 + 7i) - (12 - i)$

15. Simplify each of the following. Write your answer in standard form. (Section 10.8)

a) $(4 + 3i)(5 - i)$ b) $(2 - i)(6 - 2i)$

16. Divide. Write your and in standard form. (Section 10.8)

a) $\frac{5-3i}{2+7i}$ b) $\frac{1+i}{4-3i}$