Mth 28, Homework 6 on section 8.1, 8.2

Due by Mon, Nov 3.

Write all your working out and answers neatly, using lots of space, and showing your steps clearly. Each question is worth 2 points.

Section 8.1 Simplify expressions with roots

(1) Evaluate these radicals **(a)** $\sqrt{49}$ **(b)** $-\sqrt{64}$ **(c)** $\sqrt{289}$

(2) Find the two square roots of 121. They are $\sqrt{121}$ and $-\sqrt{121}$

(3) Fill in the blanks:

-13 is a square root of 169 because $(\quad)^2 = (\quad)$

(4) Fill in the blanks:

3 is a fifth root of 243 because $(\quad)^5 = (\quad)$ and we say $\sqrt[5]{\quad} = (\quad)$

(5) Compute these radicals

(a) $\sqrt[3]{125}$

(b) $\sqrt[3]{-8}$

(c) $\sqrt{-64}$

(d) $\sqrt[7]{-1}$

(e) $-\sqrt[4]{10000}$

(The correct answer for some of these might be: "this radical is not a real number".)

(6) Can you explain this one without using a calculator? Simplify $\sqrt[6]{19^6}$

(7) Estimate $\sqrt{140}$ without a calculator by finding the two whole numbers it must be between. Which of these two numbers do you think it will be closest to?

(Hint: for example $\sqrt{10}$ is between 3 and 4 because $3^2 < 10 < 4^2$, and it's closer to 3.)

(8) Estimate $\sqrt[3]{300}$ without a calculator by finding the two whole numbers it must be between.

Section 8.2 Simplify radicals

(9) Evaluate these radicals **(a)** $\sqrt[6]{64}$ **(b)** $\sqrt[6]{-64}$ **(c)** $-\sqrt{\frac{9}{49}}$ **(d)** $\sqrt[3]{-\frac{1}{27}}$

(10) Simplify these radicals by separating perfect powers

(a) $\sqrt{18}$

(b) $\sqrt{700}$

(Hint: write the answer to (a) like this: $\sqrt{18} = \sqrt{9 \cdot 2} = \sqrt{9}\sqrt{2} = 3\sqrt{2}$
Also $7\sqrt{10}$ is not the answer to part (b)!)

(11) Simplify these radicals by separating perfect powers

(a) $\sqrt{147}$

(b) $\sqrt[3]{81}$

(12) Simplify these radicals by separating perfect powers

(a) $\sqrt{75}$

(b) $\sqrt[3]{-56}$

(c) $\sqrt[4]{160}$

If you get stuck on a question or aren't sure if you understand it:

- Go over the relevant class notes and section in the textbook.
- Check if you get the right answer for a similar odd-numbered question in the textbook (answers at the back of the book).
- Ask me about it after class.
- Come to my office hours: Mon 11:30 - 12:30, Wed 11:30 - 12:30 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.