Mth 28, Homework 9 on sections 8.5, 8.6

Due by Wed, Apr 10.

Please use lots of space and explain your answers, showing clearly any work you had to do. Each question is worth 2 points.

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(1) Simplify:

(a) $\dfrac{\sqrt{50}}{\sqrt{2}}$ **(b)** $\sqrt{\dfrac{3}{40}}$

(Remember, for a square root expression to be simplified there should be no perfect squares or fractions inside the square root, and no square roots in the denominator of a fraction.)

(2) Simplify:

(a) $\dfrac{\sqrt{18}}{\sqrt{x}}$ **(b)** $\dfrac{-4\sqrt{75t}}{5\sqrt{2}}$

(Use that $\sqrt{x}\sqrt{x} = x$.)

(3) Simplify:

(a) $\dfrac{\sqrt[3]{y}}{\sqrt[3]{4}}$ **(b)** $\dfrac{\sqrt[3]{-16}}{\sqrt[3]{25w}}$

(This time, for cube roots, $\sqrt[3]{x}\sqrt[3]{x}\sqrt[3]{x} = \sqrt[3]{x}\sqrt[3]{x^2} = x$. Did you get $-2\sqrt[3]{10w^2}/(5w)$ for part (b)?)

(4) Simplify:

(a) $\dfrac{6}{4+\sqrt{10}}$ **(b)** $\dfrac{5\sqrt{2}}{3-\sqrt{2}}$

(Hint: this needs the trick of multiplying top and bottom by the conjugate of the bottom. So for part (a) use $4-\sqrt{10}$.)

(5) Simplify: $\dfrac{\sqrt{x}+\sqrt{13}}{\sqrt{x}-\sqrt{13}}$

(6) Solve: $\sqrt{3x-2} = 5$

(The method to solve square root equations is to get the square root alone on one side and then square both sides.)

(7) Solve: $\sqrt{4x+8}+6=0$

(Make sure to check that the solution you find works in the original equation.)

(8) Solve: $\sqrt{2x-6}+3=x$

(The method produces two solutions this time; make sure they are valid.)

(9) Solve: $\sqrt{12-x}=3\sqrt{x-2}$

(10) Solve: $\sqrt{x}+2=\sqrt{2x+4}$

(This one is a little harder. First, square both sides. There is still a $\sqrt{x}$ term, so move it to be alone on one side and then square both sides again.)

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 12:00 - 1:00, Wed 12:00 - 1:00 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.