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

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### Section 8.5 Divide radical expressions

**(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 here that $\sqrt{x}\sqrt{x} = x$. Also be careful when looking at what is inside a radical; for example $\sqrt{75t}$ and $\sqrt{75t}$ mean different things.)

**(3)** Simplify:

**(a)** $\dfrac{\sqrt[3]{y}}{\sqrt[3]{4}}$     **(b)** $\dfrac{\sqrt[3]{-16w}}{\sqrt[3]{5}}$

(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 $\dfrac{-2\sqrt[3]{50w}}{5}$ for (b)?)

**(4)** Rationalize the denominator: $\dfrac{5\sqrt{x} - \sqrt{y}}{\sqrt{x}}$

**(5)** Rationalize the denominators:

**(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 $4 - \sqrt{10}$.)

**(6)** Rationalize the denominator: $\dfrac{\sqrt{x} + \sqrt{3}}{\sqrt{x} - \sqrt{3}}$

### Section 8.6 Radical equations

**(7)** 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.)

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

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

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

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

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

**(11)** 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.)

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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.