

**Mth 28, Homework 8 on sections 8.3, 8.4**

Due by Wed, Apr 3.

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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) (a) Write  $x^{1/4}$  as a radical.  
(b) Write  $(2y)^{1/3}$  as a radical.
- (2) (a) Write  $\sqrt{x}$  using a rational exponent.  
(b) Write  $\sqrt[5]{-3xy}$  using a rational exponent.
- (3) (a) Write  $x^{2/3}$  as a radical expression in two different ways.  
(b) Write  $\sqrt{m^5}$  using a rational exponent.  
(c) Write  $(\sqrt[4]{21w})^7$  using a rational exponent.

(4) Evaluate:

- (a)  $64^{1/2}$   
(b)  $64^{2/3}$   
(c)  $(-64)^{2/3}$   
(d)  $-64^{2/3}$   
(e)  $64^{-1/6}$

(In part (d), remember that  $-64^{2/3}$  means  $-(64^{2/3})$ . For part (e) use that  $a^{-n} = \frac{1}{a^n}$ .)

(5) Assume all variables are positive and simplify these. Keep the rational exponents - no need to convert to radicals.

- (a)  $x^{3/2} \cdot x^{1/4}$   
(b)  $(27x^{1/3})^{2/3}$   
(c)  $(16x^{-2/5}y^{3/5})^{5/2}$

(Use the properties of exponents, going step by step. For part (a) you should add the exponents.)

(6) Assume all variables are positive and simplify:  $\left(\frac{625x^4y^{-1/3}}{y^2}\right)^{3/4}$

(One way to start is to first simplify the inside part  $\frac{y^{-1/3}}{y^2}$ . Then use the Quotient to a Power property:  $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$  with  $m = 3/4$  ...)

(7) Simplify:

(a)  $2\sqrt{5} + 8\sqrt{5}$

(b)  $4\sqrt{3} + \sqrt{6} - 10\sqrt{6}$

(8) Simplify:  $\sqrt{12} + 4\sqrt{3} - \sqrt{75}$

(Simplify the radicals first by taking out perfect square factors. Then you can add and subtract.)

(9) Simplify:

(a)  $(4\sqrt{3})(2\sqrt{7})$

(b)  $3\sqrt{5}(7 - 2\sqrt{5})$

(10) Simplify:

(a)  $(8 + \sqrt{3})(5 - 2\sqrt{3})$

(b)  $(10 - 3\sqrt{6})^2$

(You should be FOILING for both of these. And remember that  $\sqrt{m}\sqrt{m} = m$ .)

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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 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.