Math 10 Name:_____

Midterm Review

Below are the topics we've covered in each unit. The bullet points are the big ideas you need to study. After this, for each unit there are one or two "ultimate questions" that require an understanding of the entire unit to solve. If you can do and explain every aspect of these questions, you will do very well on the midterm. If you can't, then you may still do well, as these questions are very difficult. However, your goal should be to explain all of them to someone by Wednesday – midterm day. Remember: all your homework for the whole year can be found at www.mrmclellan.ca.

Unit 1: Radicals

- Multiplying and dividing radicals
- Adding and subtracting radicals
- Simplifying radicals
- Rationalizing the denominator

Must be able to do and explain this question:

1. Rationalize: $\dfrac{2\sqrt{3}-5\sqrt{2}}{5\sqrt{6}+2\sqrt{2}}$ Answer: $\dfrac{30\sqrt{2}-4\sqrt{6}-50\sqrt{3}+20}{142}$

Unit 2: Exponents

- Multiplying and dividing powers
- Using negative exponents
- Using fractional exponents
- Solving exponential equations

Must be able to do and explain both these questions:

2. Simplify and write in radical form: $\left(\dfrac{x^{-2}y^{5}z^{-1/2}}{x^{2}y^{5}m^{4/3}}\right)^{-2}$ Answer: $x^{8}\cdot\sqrt[3]{m^{8}}\cdot z$

3. Solve for x: $4^{x-3}=8^{2x-7}$ Answer: $x=15/4$

Unit 3: Polynomials

- Add and subtract polynomials
- Multiply polynomials
- Factor polynomials

Must be able to do and explain both these questions:

4. Simplify and factor: $2x(x-5)-2(12-x)$ Answer: $2(x+2)(x-6)$

5. Simplify and factor: $x^3(x+3)-(3x^3+16)$ Answer: $(x^2+4)(x+2)(x-2)$

Unit 4: Rational Expressions

- Multiply and divide rational expressions
- Add and subtract rational expressions
- State restrictions on rational expressions
- Perform long division on polynomials

Must be able to do and explain both these questions:

6. Simplify: $\left[\dfrac{\dfrac{3x}{2x+4}}{\dfrac{4x}{3x+6}}\right]+1+\dfrac{2}{x-3}$ Answer: $\dfrac{11x-29}{2x-6}$

7. Simplify: $\dfrac{4x+4}{x^2+2x-3}-\dfrac{8x-2}{x^2+x-2}$ Answer: $\dfrac{-2(2x+7)}{(x+3)(x+2)}$

Unit 5: Solving Equations

- Solving grade 9 equations
- Solving rational equations
- Solving quadratic equations
- Solving word problems with equations

Must be able to solve all these equations:

8. $\dfrac{2x-3}{3x-11}=\dfrac{2-2x}{x+9}-1$ Answer: $x=-10$

9. $6x^2+72=42x$ Answer: $x=4,3$