Skill Review #9 Hints: (If you do not know what a word/phrase means, look it up, or ask me!)

1 and 2: Distribute, drop parentheses, and combine like terms. Be careful with minor calculations and positive/negative.

3: Multiply both parts by the conjugate of the denominator, and simplify. This is called “rationalizing the denominator.”

4: Use the distributive property. Remember that *i* is the square root of -1, so *i* squared is -1.

5: Distribute, drop the parentheses, and combine like terms. Be careful with minor calculations and positive/negative.

6: The discrimininant is what is under the radical in the quadratic formula, and tells the number of solutions. Since the square root of a positive number has a positive and negative value, if the discriminant is positive, there are two real solutions. Since the square root of a negative number has a positive and negative value and is imaginary (because the square root of -1 is *i*) if the discriminant is negative, there are two imaginary solutions. Since the square root of zero is only zero, if the discriminant is positive, there is one real solution. Be sure to have the equation in standard form first.

7: Use both long and synthetic division to ensure you get the same answer. The remainder should be equal to the value of the function when you substitute -7 into the dividend.

8: Remember that we cannot take the square root of a negative number in the real number system. Domain is all possible inputs/x-values, and range is all possible outputs/y-values.

9 and 10: Rewrite using a common base. Apply any necessary exponent properties. Remember if the bases are equivalent, you can write an equation solely from the exponent equivalence.

11: Distribute, drop parentheses, and isolate the variable.

12: Set equal to zero and factor. Then set each factor equal to zero and solve.

13: Isolate b2, then take the square root of both sides. Remember, quadratics have two solutions, since the highest degree is two.

14: Arrange into standard form, and apply the quadratic formula, being sure to simplify as much as possible.

15: Use the sum of cubes formula to factor.

16: Use normal factoring techniques, but consider what the square root of x4 is. Also be sure to double check for differences of squares, which can be factored farther.

17 and 18: Remember the notation f(x) means to substitute in whatever is in parentheses (since it is the input) in for the variable in the function, and simplify the output.

19, 20, and 21: Same note as 17 and 18. Also be sure to apply the appropriate operation (subtraction, addition, and multiplication)

22: This is function composition, in which you would substitute g(-n) in for n in h(n).

23 and 24: Same note as 19 – 21. Also remember that an expression like 4f(x) for example, means to evaluate f(x) and multiply the output by 4.

25: Isolate the variable, and then graph. Remember to switch the direction of the inequality sign if you multiply or divide by a negative.

26: Remember the end behavior can be determined from the sign and degree of the first term. Check your notes if necessary.