Quiz 0.

The purpose of this take-home quiz is to provide information concerning your current knowledge of the review material. Your score will be counted as **bonus** *towards your homework score. You are not allowed to collaborate with others on this assignment.*

1. Evaluate the product $(x-1)(x^2 - x + 1)$.

2. (40 points) Factor the polynomial $x^3 + 3x^2 + x + 3$.

3. Solve the equation $3x - 11 = x - 5$.

4. Solve the equation $x^2 - 4x - 5 = 0$.

5. Simplify the expression

$$\frac{x^2 - 3x}{x^2 - 9} + \frac{1}{x+3}.$$

6. If $x \geq 2$ then at least and at most how much is $\dfrac{1}{x}$?

7. While studying full time, Julia makes \$1000 per month on a part time job. She spends \$600 per month on rent, food, gas, and similar expenses. She may use the rest of the money to buy music CD's at \$15 each.

   (a) At most how many music CD's can she buy per month without going into debt?

(b) Julia observed that whenever she has more than \$200 left at the end of the month, her boyfriend Joe tends to "borrow" the money, arguing that she earned obviously more than what she needed. If she has less than \$200 left, Joe goes elsewhere to find money since Julia would not have enough to cover for his needs anyway. Besides the obvious advice (that in the long run Julia needs a new boyfriend), at least how many CD's would you suggest she should buy per month for the moment, in order to keep her boyfriend out of her wallet, without getting into an argument?

8. Solve the inequality $(x-2)(x+3) \leq 0$.

9. Without using a calculator, determine the exact value of $\sqrt{4} - 125^{\frac{1}{3}}$.

10. Use rational exponents to rewrite $\dfrac{\sqrt{2}}{\sqrt[3]{2}}$ as a single power of 2.

Good luck.   Gábor Hetyei