

HW 19

1. Read the following article: <http://www.sciencenews.org/articles/20031213/mathtrek.asp>
2. The following problem is from probable author Alcuin of York's *Problems for the Quickening of the Mind*, written about 775AD.
"Thirty flasks—10 full, 10 half-empty, and 10 entirely empty—are to be divided among 3 sons so that the flasks and contents should be shared equally. How may this be done?" (Eves)
3. Give 20 numbers and their significance in our society. For example, 13 is considered an unlucky number. Another example is "sweet sixteen and never been kissed."
4. What influence do you think mathematical progress has on religion?
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6. Verify the identity $(a - b)^3 + 3ab(a - b) = a^3 - b^3$.
7. Solve $x^3 + mx = n$.
8. Put constants of your choice in for m and n in $x^3 + mx = n$ and solve.
9. Use the transformation $x = z - \frac{a_1}{3}$ to convert $x^3 + a_1x^2 + a_2x + a_3 = 0$ into a simpler equation.
10. Skim the following article: <http://mathworld.wolfram.com/QuinticEquation.html>
11. Give the general solution to $ax+b=0$.
Give the general solution to $ax^2+bx+c=0$.
Give the general solution to $ax^3+bx^2+cx+d=0$. Just kidding.
Give the general solution to $ax^4+bx^3+cx^2+dx+e=0$. Just kidding.
Give the general solution to $ax^5+bx^4+cx^3+dx^2+ex+f=0$. Not kidding.