"Math is Cool" Championships – 2014-15

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11th & 12th Grade – October 22, 2014

Pressure Round Contest

1	Evaluate: $$\sin\left(\cos^{-1}\frac{15}{17}+\tan^{-1}\frac{4}{3}\right).$$
2	Find the sum of the squares of the zeros (roots) of the polynomial: $$-x^4+3x^3+2x^2+1$$
3	If p and q are positive prime numbers such that $x^2-px+q=0$ has distinct positive integer solutions, find the value of p^2+q^2.
4	Suppose $f(x)-2f(1-x)=x$ for all values of x. What is $f(x)$ in terms of *x* only?
5	What is the smallest positive prime factor of the number N, where $\log_{2010}(\log_{2011}(\log_{2012}(\log_{2013}(\log_{2014}N))))=0.$

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