Presentations06
Early Modern and Early Calculus

	Topic/Exercise		
1	Calculate the Parallax, from opposite sides of earth's orbit (~ 184,000) miles), of the nearest star.		
2	Show that light traveling along a line toward a parabolic mirror (assume equation $y = ax^2$) parallel to the axis of symmetry is reflected toward the focus. (Use some modern calculus and DE's.)		
3	State and explain Newton's generalized binomial theorem.		
4	Use the binomial theorem to expand $\frac{1}{1+x}$. Then use long division to do the same expansion.		
5	Use the binomial theorem to expand $\sqrt{1 + x}$.		
6	Use long division and (modern) integration to obtain Mercator's identity: $$\ln(1 + x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \cdots$$ [See #4 above.]		
7	Derive Newton's method to calculate a root of an equation. Do an example.		
8-10	Work through one of my "notes" after the solution of the quartic. See #8 and #9 below.		
8	Descartes' Method for finding tangents from http://webhome.auburn.edu/~smith01/math3010Sp25/DescartesTangent.pdf		
9	Barrow's or Newton's method for finding tangents from http://webhome.auburn.edu/~smith01/math3010Sp25/TheEarlyCalculus.pdf		
11	Select problems from your textbook from the Early Calculus section to do.		