Algebra Warm-up

- 1. What are the formulas for
 - i. Sum of an arithmetic series with n terms, with first term a_1 and last term a_n ?
 - \circ ii. Sum of a geometric series with n terms, with first term a_1 and ratio r?
- \circ iii. Sum of a geometric series with ∞ terms, with first term a_1 and ratio -1 < r < 1? 2. What are Vieta's formulas for:
 - $\circ \ \ {\rm a \ quadratic} \ ax^2 + bx + c \ {\rm with \ roots} \ r,s : \\$
 - lacksquare i. Sum of roots r+s=
 - lacksquare ii. Product of roots rs=
 - a cubic $ax^3 + bx^2 + cx + d$ with roots r, s, t:
 - lacksquare iii. Sum of roots r+s+t=
 - lacktriangledown iv. Sum of pairwise products of roots (aka taken two at a time) rs+st+rt=
 - lacksquare v. Product of roots rst=
 - a general polynomial $a_n x^n + a_{n-1} x^{n-1} + \cdots + a_1 x + a_0$:
 - vi. Sum of roots =
 - vii. Product of roots =
 - vii. Sum of roots taken k at a time =