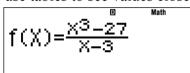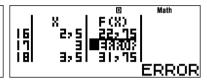## INVESTIGATING LIMITS

1. To examine limit numerically, evaluate the expression for values that are closer to the limiting value. For example, consider the:

$$\lim_{x \to 3} \frac{x^3 - 27}{x - 3}$$

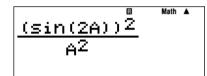use tables to see values close to $x = 3$.

Notice that the function is indeterminate at $x = 3$, Use several tables, getting closer and closer the limiting value at $x = 3$. How close you can get ? discuss in your group, what is the limiting value ?

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2. On the fx-911 ID Plus we can use the [CALC] command to find another way of limits. In math mode, enter the expression and then tab [CALC] to evaluate it for different values of variable. In the screen below, Anti is exploring $\lim_{A \to 0} \frac{\sin^2 2A}{A^2}$, after typing [CALC] she entries a value for A and then [=] she taps [=] again to enter further values for A.

Anti continued entering values for A that were closer and closer the limiting value of 0. What do you notice about the value of the expression ? what is the limiting value ?

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_____

Check in your group what is happening ?

_____
_____

3. Limit to infinity can be in similar ways, checking values of an expression as the variable has larger and larger values. Consider $\lim_{x \to \infty} \frac{2x - 3}{x + 1}$. With a partner, try each of the two approaches shown on this sheet to evaluate the limit. (which do you prefer ? Why ?)

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