Example

Use the Rational Zero Theorem to list all possible rational zeros for the given function.

\[ f(x) = 5x^3 + 3x + 9 \]

**ANSWER:**

Factors of 9
Factors of 5 = \( \pm 1, \pm 3, \pm 9 \)

So then all of the possible rational zeros for \( f(x) \) are

\( \pm 1, \pm 3, \pm 9, \pm \frac{1}{5}, \pm \frac{3}{5}, \pm \frac{9}{5} \)

**NOTE:** Since the “±” sign is not readily available on a keyboard and cannot be recognized in most cases, this answer would be entered in WeBWorK as follows:

\[ 1, -1, 3, -3, 9, -9, \frac{1}{5}, -\frac{1}{5}, \frac{3}{5}, -\frac{3}{5}, \frac{9}{5}, -\frac{9}{5} \]

The numbers in the list can be in any order.