

### Answer on Question #42516 – Math - Algebra

Use the Rational Zeros Theorem to write a list of all possible rational zeros of the function.

Show work please and explanation.

#### Solution

Let  $f(x) = 3x^3 + 39x^2 + 39x + 27$ .

According to Rational Zeros Theorem, if a polynomial function, written in descending order of the exponents, has integer coefficients, then any rational zero must be of the form  $\pm p/q$ , where  $p$  is a factor of the constant term and  $q$  is a factor of the leading coefficient.

In our case, constant term = 27, leading coefficient = 3, so

$$q = 1, 3,$$

$$p = 1, 3, 9, 27,$$

and all possible rational zeros (roots) are  $1, -1, \frac{1}{3}, -\frac{1}{3}, 3, -3, 9, -9, 27, -27$ .