Given the quadratic function $3x^2 + 12x + 3 = 0$, state the following:

The equation in vertex form _____

The vertex _____

Will the function have a maximum or minimum/ where will that point be? _____

What are the x- intercepts ? _____

What is the y-intercept? _____

Evaluate f(2): _____

Given the function $f(x) = \frac{x+2}{x^2+7x+6}$ state the following:

The domain of f(x):_____

The x intercept(s):_____

The y intercept:_____

The equation of the vertical asymptote(s):_____

The equation of the horizontal asymptote:_____

State the horizontal asymptote, expressed in limit notation:_____

Evaluate f(-3):_____

Given:

$$\frac{x^3+5}{(x-2)(x+3)}$$

State all vertical asymptotes:

State the horizontal asymptote, or if not applicable, state the end behavior asymptote:

Given the following roots, create a polynomial of minimal degree in standard form:

1, -1, 2+3i

Verify through synthetic division that 1 and -1 are roots of the polynomial you created:

Solve for x: $\frac{x-3}{x} - \frac{3}{x+1} + \frac{3}{x^2+x} = 0$, state any extraneous solutions:

Find the intervals that make the inequality true:

$$\frac{(2x-7)(x+1)}{x+5} \geq 0$$

For the polynomial: $2x^6 + 7x^5 - 63x^4 + 69x^3 - 17x^2 + 62x + 48$

Descartes rule says there will be how many possible positive roots?

Negative roots?

What are the possible rational roots?

Given that some of the roots are x= 2, 3, -8, -1/2; how many roots in total does this polynomial have? Find the remaining roots:

Rewrite the function as a product of linear factors:

For the polynomial:f(x)= $x^3 + 2x^2 - 6x - 4$

Is 3 an upper bound?

Is -5 a lower bound?

Use the remainder theorem to verify that x-2 is a factor of the polynomial