How many discontinuities does this function have?

$$\frac{x^2 + 4x + 4}{x^3 - 9x}$$

Answer: 3

Simplify the Following, write answer in standard form

$$(3 - 9i) - (4 + 8i)$$

-1 - 17i

Solve the following equation and check for extraneous solutions

$$5\left|6x + 7\right| + 8 = 2$$

No Solution

True or False: If the degree of the numerator of a rational function is greater than the degree of the denominator, then there must be a slant asymptote

False

Write the equation of the quadratic function that has

$3 - i\sqrt{3}$ as a zero

f(x) = x^2 - 6x + 12

Graph the solution to the following inequality:

$$3|x - 9| + 6 \leq 9$$

Solve for x

$$\frac{1}{x} - 3 = 9$$

x = 1/12

True or False: Is it possible for a 6th degree polynomial to have no real solutions and only complex solutions

True

Simplify the following

$$\frac{4+i}{1-2i}$$

$$\frac{2+9i}{5}$$

Determine the coordinate of the x intercept(s) for the function $f(x) = \dfrac{x^2 - 2x - 8}{x^2 - 12x - 28}$

(4, 0)

Name the three types of functions that have extraneous solutions

Rational, square root, absolute value

Solve the following inequality and write the answer in interval notation

$$(x+3)^2(x-1)^3 < 0$$

(-∞, 3)U(-3, 1)

True or False the number -16 is all of the following:

- It is a real number
- It is an Integer
- It is a rational number
- It is a complex number

<p align="center">**True**</p>

Determine the coordinate of any holes for the function.

$$f(x) = \frac{x^2 - 2x - 8}{x^2 - 12x - 28}$$

(-2, 3/8)

Solve the inequality

$$10 + 12|x + 23| > -130$$

All Real Numbers

True or False: It is possible for a 5th degree polynomial to have two real and three complex solutions

False

Determine the coordinate of the y intercept(s) for the function $f(x) = \dfrac{x^2 - 2x - 8}{x^2 - 12x - 28}$

(0, 2/7)

Simplify the following:

$$(11 - 2i)(11 + 2i)$$

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1 - 3i is a zero of the function below. Determine all other zeros f(x) = $x^3 - 8x^2 + 22x - 60$

x = 1 + 3i, 6