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QUESTION 1

Find the number and type of roots of the equation

$x^3 - 4x^2 + 4x = 0$

. Select your answers from the drop-down menus.

The equation has one real root and a double real root ✓ at

and ✓ .

QUESTION 2

Find the number and type of roots of the equation

$x^3 - 25x = 0$

.

- one real root at 0 and a double real root at -5
- one real root at 0 and a double real root at 5
- three real roots at 0, 5, and -5 ✓

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one real root at 0 and two imaginary roots at
$5i$
and
$-5i$

QUESTION 3

Solve the equation
$x^3 + 64x = 0$
. Find the number and type of roots.

- one real root at 0 and two imaginary roots at $8i$ and $-8i$ ✓
- one real root at 0 and a double real root at 8
- one real root at 0 and a double real root at -8
- three real roots at 0, 8, and -8

QUESTION 4

Find the number and type of roots of the equation

$x^2 + 10x + 25 = 0$

.

Select your answers from the drop-down menus.

There is one double real root ✓ at -5 ✓.

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QUESTION 5

Solve the equation

$x^3 + 14x^2 + 49x = 0$

. Find the number and type of roots.

Drag and drop your answers to correctly complete the sentence.

The equation has one real root and a double real root ✓ at

0 and -7 ✓.

0 and 7

three real roots

-7, 0 and 7

$-7i$, 0 and $7i$

one real root and two imaginary roots

QUESTION 6

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Solve the equation

$x^2 + 4x + 4 = 0$

. Find the number and type of roots.

Drag and drop your answers to correctly complete the sentence.

The equation has one double real root ✓ at -2 ✓.

2	$2i$ and $-2i$	two real roots	2 and -2	two imaginary roots

QUESTION 7

Solve the equation

$x^2 - 36 = 0$

. Find the number and type of roots.

Select your answers from the drop-down menus.

There are two real roots ✓ at -6 and 6 ✓.

QUESTION 8

Find the number and type of roots of the equation

$x^2 + 49 = 0$

.

one double real root at
-7

one double real root at 7

two imaginary roots at
$7i$
and
$-7i$

two real roots at 7 and
-7

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QUESTION 9

What is the greatest number of possible imaginary zeros for the function
$f(x) = -2x^5 + 7x^4 + 3x^3 + 7x^2 - 5x + 1$
?
Enter your answer in the space provided.
The greatest number of possible imaginary zeros for the function is
4 .

QUESTION 10

What is the greatest number of possible imaginary zeros for the function

$f(x) = -x^6 - 5x^5 + 3x^4 + x^3 + 2x^2 - 4x - 3$

?

Enter your answer in the space provided.

The greatest number of possible imaginary zeros for the function is

6 ✓.

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QUESTION 11

Use Descartes' Rule of Signs to find the possible numbers of imaginary zeros for

$f(x) = x^6 + 2x^5 + 2x^4 + 7x^3 - 3x^2 - 2x - 25$

.

- (◉) 0, 2, or 4 ✓
- ( ) 5
- ( ) 1
- ( ) 1, 3, or 5

QUESTION 12

Use Descartes' Rule of Signs to find the possible numbers of imaginary zeros for

$f(x) = x^5 + 7x^4 - 4x^3 - 2x^2 + 9x + 12$

.

- ○ 1, 3, or 5
- ○ 1 or 4
- ○ 2 or 3
- ◉ 0, 2, or 4 ✓

QUESTION 13

Use Descartes' Rule of Signs to find the possible numbers of imaginary zeros for

$f(x) = -x^5 + 6x^4 + 3x^3 - x^2 + 7x + 18$

.

- ○ 1 or 4
- ◉ 0, 2, or 4 ✓
- ○ 2 or 3
- ○ 1, 3, or 5

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QUESTION 14

Find the number and type of roots of the equation

$x^3 - 18x^2 + 81x = 0$

.

Select your answers from the drop-down menus.

The equation has a real root and a double real root ✓ at

0 and 9 ✓ .

QUESTION 15

Solve the equation

$x^2 - 6x + 9 = 0$

. Find the number and type of roots.

- ◉ one double real root at 3 ✓
- ○ one double real root at -3
- ○ two imaginary roots at $3i$ and $-3i$

- two real roots at 3 and
  − 3

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