View hints View feedback Play All

QUESTION 1

Drag and drop the correct answer into the space(s) provided.

Describe the number of possible real zeros of

$g(x) = 5x^5 - 6x^4 + x^3 - 6x^2 - 7x + 1$

.

There is/are 4 sign change(s) in $g(x)$

There is/are 1 sign change(s) in $g(-x)$

6 3 2 5

QUESTION 2

Drag and drop the correct answer into the space(s) provided.

What are the lower and upper bounds of the interval where all the real zeros of the function

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

are located?

Use the synthetic divisions or graph the function.

3	1	0	−4	1	−5	2
		3	9	15	48	129
	1	3	5	16	43	131

−3	1	0	−4	1	−5	2
		−3	9	−15	42	−111
	1	−3	5	−14	37	−109

lower bound: − 3 ✓

upper bound: 3 ✓

− 109 | − 2 | 20 | − 10 | 131

QUESTION 3

Drag and drop the correct answer into the space(s) provided.

What are all the real zeros of

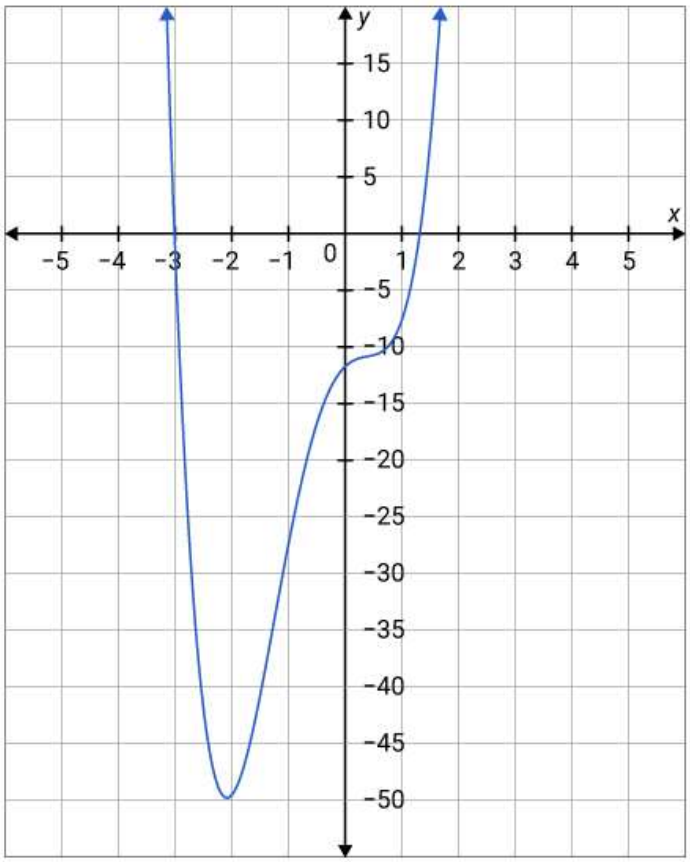
$h(x) = 3x^4 + 5x^3 - 9x^2 + 5x - 12$

?

The negative real zero is − 3 ✓.

The positive real zero is

$\frac{4}{3}$ ✓.



2 $-\frac{4}{3}$ $\frac{2}{3}$ -2 $-\frac{2}{3}$

QUESTION 4

Fill in the blank(s) with the correct answer.

Describe the possible zeros of this function.

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

The number of possible positive real zeros is at most 3 ✓.

The number of possible negative real zeros is at most 1 ✓.

QUESTION 5

Fill in the blank(s) with the correct answer.

Describe the number of possible real zeros of

$b(x) = 7x^6 - 6x^5 + x^3 + 9x^2 - 11x + 2$

.

The number of possible positive real zeros is at most 4 ✓.

The number of possible negative real zeros is at most 2 ✓.

QUESTION 6

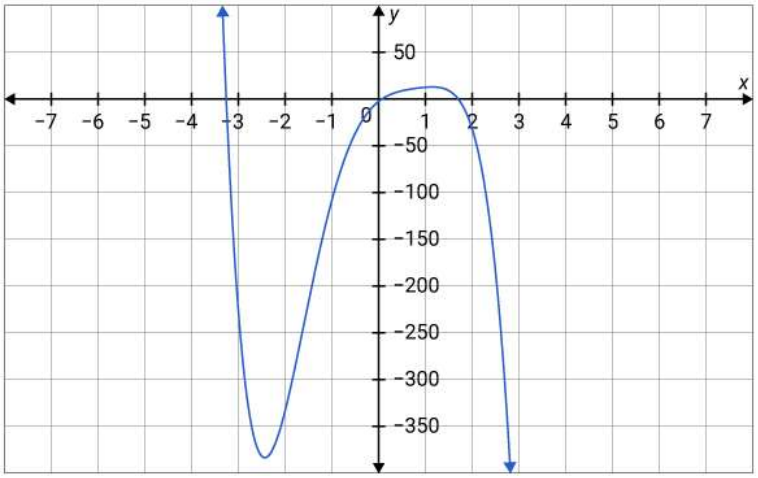
Fill in the blank(s) with the correct answer.

The graph shows the function

$t(x) = -4x^5 + 25x^3 - 45x^2 + 39x - 3$

. In what interval must all real zeros of this function lie?

[-4 ✓ , 2 ✓]



QUESTION 7

Fill in the blank(s) with the correct answer.

Given the function

$m(x) = 9x^5 - 7x^3 + 2x^2 - 8x - 2$

, find the number of positive and negative real roots.

$m(-x) =$

$-9x^5 + 7x^3 + 2x^2 + 8x - 2$ ✓

There are 3 ✓ variations in the signs in $m(x)$.

There are 2 ✓ variation in the signs in $m(-x)$.

Enter numbers from greatest to least.

There are 3 ✓ or 1 ✓ positive real roots.

There are 2 ✓ or 0 ✓ negative real roots.

QUESTION 8

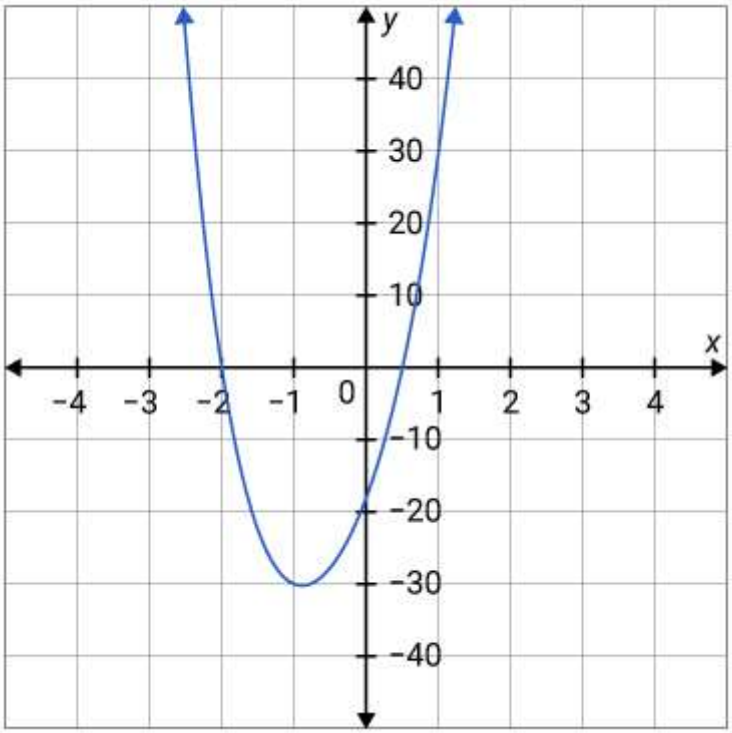
Fill in the blank(s) with the correct answer.

Find all the real zeros of

$f(x) = 2x^4 + 3x^3 + 16x^2 + 27x - 18$

.

The positive real zero is



$\frac{1}{2}$ ✓ .

The negative real zero is -2 ✓ .

QUESTION 9

Choose the correct answer from the drop-down menu.

Use the synthetic divisions to determine the upper bound of the interval in which all real zeros of the function

$h(x)$

must lie.

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

6	1	−6	2	−4	5
		6	0	12	48
	1	0	2	8	53

0.5	1	−6	2	−4	5
		0.5	2.75	2.375	−0.8125
	1	−5.5	4.75	−1.625	4.1875

1	1	−6	2	−4	5
		1	−5	−3	−7
	1	−5	−3	−7	−2

upper bound: 6 ✓

QUESTION 10

Choose the correct answer from the drop-down menu.

Determine all the real zeros of this function.

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

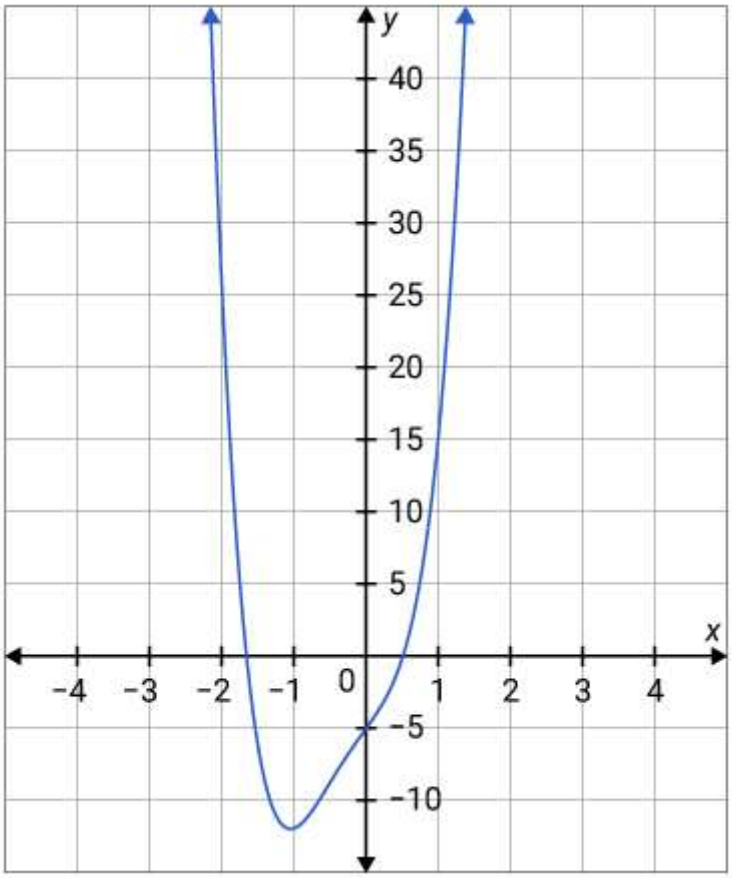
The real zeros are

$x =$

$-\frac{5}{3}$ ✓ and

$x =$

$\frac{1}{2}$ ✓



QUESTION 11

Select the correct option.

What does the synthetic division tell you about the real zeros of the

$m(x) = -5x^4 - 22x^3 + 3x^2 + 18x - 1$

?

-5	-5	-22	3	18	-1
		25	-15	60	-390
	-5	3	-12	78	-391

- -5 is a root of $m(x)$

All roots are greater than
-5

All roots are between
-5
and
-391

All roots are less than
-5

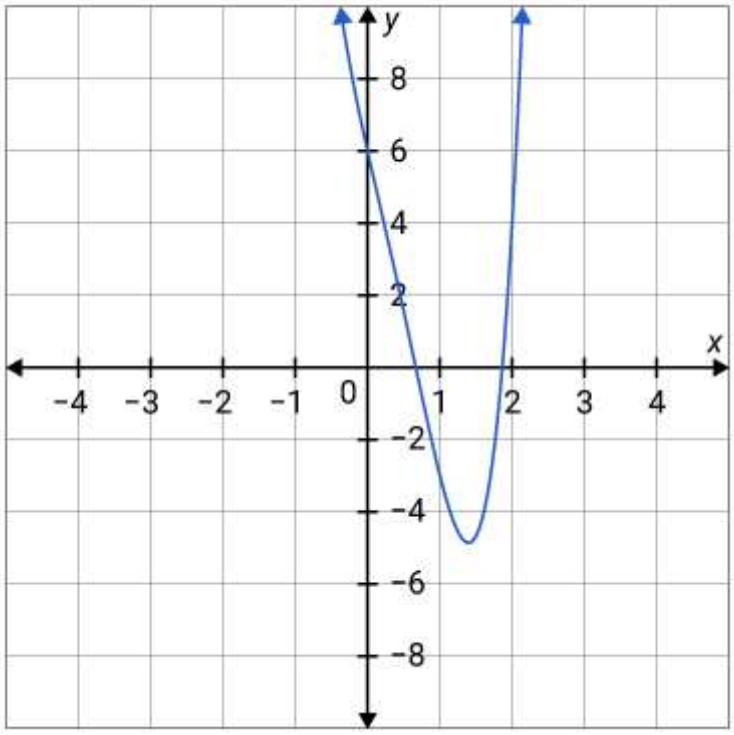
QUESTION 12

Select the correct option.

In which interval must all real zeros of

$$f(x) = 3x^4 - 5x^3 + 2x^2 - 9x + 6$$

lie?



- [0,1]
- [−1,1]
- [1,2]
- [0,2] ✓

QUESTION 13

Select the correct option.

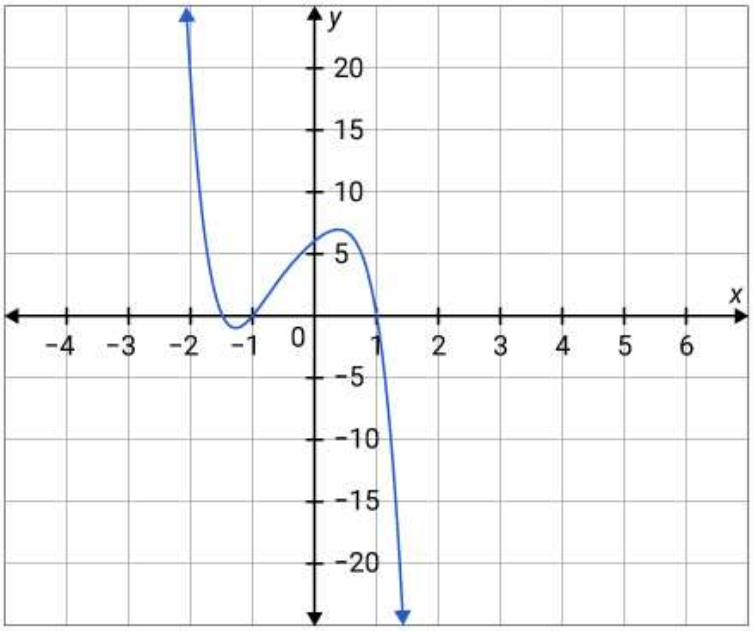
Which values of

x

are the real zeros of

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

?



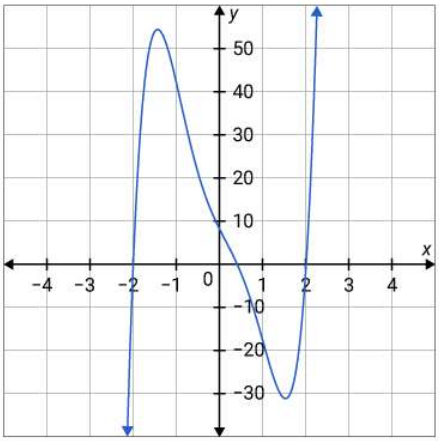
- [x] $x = -\frac{3}{2}$, $x = -1$, and $x = 1$
- [ ] $x = -1$, $x = -\frac{4}{3}$, and $x = 1$
- [ ] $x = -1$, $x = 2$, and $x = 3$
- [ ] $x = -2$, $x = -1$, $x = 2$

QUESTION 14

Which values are zeros of

$m(x) = 5x^5 - 2x^4 - 15x^3 + 6x^2 - 20x + 8$

?



- [x] $x = -2$
- [ ] $x = -\frac{16}{5}$
- [x] $x = \frac{2}{5}$
- [x] $x = 2$
- [ ] $x = 4$
- [ ] $x = \frac{1}{5}$

☐ $x = -4$

☐ $x = \frac{16}{5}$

QUESTION 15

Drag and drop the correct answer into the space(s) provided.

How many possible rational zeros does this function have?

$g(x) = x^3 - 15x^2 + 4x + 16$

This function has 10 ✓ possible rational zeros.

8 12 14 5

QUESTION 16

Drag and drop the correct answer into the space(s) provided.

What are all of the possible rational zeros of

$p(x) = x^3 + 7x^2 - 10x - 32$

?

$\pm 1, \pm 2, \pm 4, \pm 8, \pm 16,$ and ± 32 ✓

$1, 2, 3, 4, 5, 6, 7, 8, 16,$ and 32

$\pm 2, \pm 4, \pm 8, \pm 16,$ and ± 32

$0, \pm 1, \pm 2, \pm 5, \pm 7, \pm 16,$ and ± 32

QUESTION 17

Drag and drop the correct answer into the space(s) provided.

List all possible rational zeros of

$h(x) = 17x^3 + x^2 - 5x + 3$

Fill the boxes from the least to the greatest.

$\pm$ $\frac{1}{17}$ ✓ , $\pm$

$\frac{3}{17}$ ✓ ,

±

1 ✓ ,

and

±

3 ✓

$\frac{17}{3}$ $\frac{1}{3}$ 17

QUESTION 18

Fill in the blank(s) with the correct answer.

List all of the possible rational zeros of the function $f(x)$.

$f(x) = 5x^3 - 12x^2 - 7x + 15$

Enter your answers in the spaces provided from least to greatest.

±

$\frac{1}{5}$ ✓ ,

±

$\frac{3}{5}$ ✓ ,

±

1 ✓ ,

±

3 ✓ ,

±

5 ✓ ,

±

15 ✓

QUESTION 19

Fill in the blank(s) with the correct answer.

If

$f(x) = x^3 + 8x^2 - 5x - 6$

, what is the possible **number** of rational zeros?

The function

$f(x)$

has 8 ✓ possible rational zero(s).

QUESTION 20

Fill in the blank(s) with the correct answer.

Find all of the possible rational zeros of the function $h(x)$.

$$h(x) = x^3 - 12x^2 + 18$$

Enter your answers in the spaces provided from least to greatest.

$\pm$ 1 ✓ ,

$\pm$ 2 ✓ ,

$\pm$ 3 ✓ ,

$\pm$ 6 ✓ ,

$\pm$ 9 ✓ , and

$\pm$ 18 ✓

QUESTION 21

Fill in the blank(s) with the correct answer.

What is the number of all possible rational zeros of this function?

$m(x) = x^3 - 5x^2 + 28$

This function has 12 ✓ possible rational zero(s).

QUESTION 22

Choose the correct answer from the drop-down menu.

Determine the number of possible rational zeros of this function.

$h(x) = x^3 + 4x^2 - 6x - 51$

There are 8 ✓ possible rational zeros of this function.

QUESTION 23

Choose the correct answer from the drop-down menu.

What are all of the possible rational zeros of this function?

$g(x) = x^3 + 3x^2 + 4x - 11$

± 1 and ± 11 ✓

QUESTION 24

Choose the correct answer from the drop-down menu.

What are all of the possible rational zeros of

$p(x) = 6x^3 - 5x^2 + 7x + 5$

?

$\pm\frac{1}{6}, \pm\frac{1}{3}, \pm\frac{1}{2}, \pm\frac{5}{6}, \pm 1, \pm\frac{5}{3}, \pm\frac{5}{2}$, and ± 5 ✓

QUESTION 25

Select the correct option.

How many possible **rational** zeros does this function have?

$k(x) = x^3 - 20x^2 - 8x + 36$

- ○ 19
- ○ 17
- ✓ 18
- ○ 20

QUESTION 26

Select the correct option.

What are all of the possible rational zeros of this function?

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

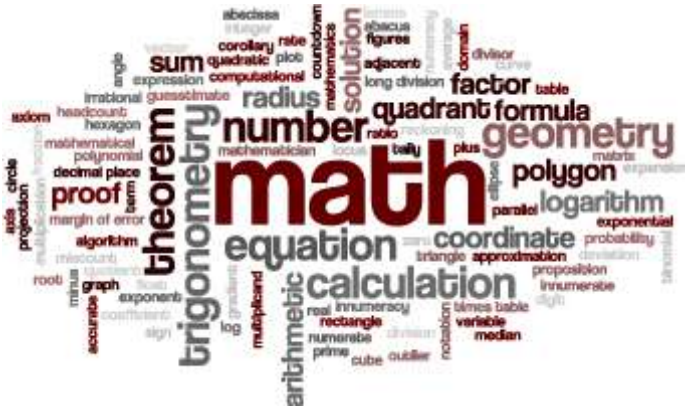
- $\pm\frac{1}{4}, \pm 1, \pm\frac{5}{4}$, and ± 5
- $\pm\frac{1}{5}, \pm\frac{4}{5}, \pm 1, \pm 4$
- $\pm\frac{1}{5}, \pm\frac{2}{5}, \pm\frac{4}{5}, \pm 1, \pm 2$, and ± 4
- $\pm\frac{1}{4}, \pm\frac{1}{2}, \pm 1, \pm\frac{5}{4}, \pm\frac{5}{2}$, and ± 5 ✓

QUESTION 27

Select the correct option.

Which shows all the possible rational zeros of this function?

$t(x) = x^3 - 15x^2 + x - 2$



- ○ $\pm 1, \pm 2, \pm 3, \pm 5,$ and ± 15
- ✓ ± 1 and ± 2
- ○ $0, \pm 1, \pm 2, \pm 3, \pm 5,$ and ± 15
- ○ $0, \pm 1,$ and ± 2

QUESTION 28

Select the correct option.

Which list shows all of the possible rational zeros of

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

?

- ○ 1,3, and 9
- ✓ ± 1, ± 3, and ± 9
- ○ ± 1 and ± 9
- ○ 1 and 9

QUESTION 29

Which values are possible rational zeros of

$m(x) = 7x^3 + 4x^2 - 3x + 10$

?

- ✓ $-\frac{5}{7}$
- ✓ $\frac{10}{7}$
- ☐ $-\frac{1}{2}$

- [x] 10
- [ ] $\frac{7}{10}$
- [ ] $-\frac{1}{5}$
- [ ] 7
- [ ] $\frac{7}{2}$

QUESTION 30

How many possible positive and negative real zeros does this function have?

$h(x) = 2x^6 + 3x^5 - 6x^4 + 4x^3 - x^2 - 2x - 9$

Select your answers from the drop-down menus.

$h(x) =$

$2x^6 - 3x^5 - 6x^4 - 4x^3 - x^2 + 2x - 9$

At most, the number of possible positive real zeros is 3 ✓ .

At most, the number of possible negative real zeros is 3 ✓ .