Simplify: (2-5i) - (3+4i) - (2+i)

- 3+10i
- 3-10i
- -3+10i
- -3-10i

Find the value of 'c' that will allow this polynomial to be written as a perfect square.

$$x^2 - x + c$$

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

The domain of $\frac{x+1}{(x+3)(2x-3)}$ is

- $R \setminus \{-3, \frac{3}{2}\}$
- $R \setminus \{3, \frac{-3}{2}\}$
- $R \setminus \{-3, 3\}$
- $R \setminus \{-3\}$

Factor completely the polynomial $6ax^2 - 24axy + 5axy - 20ay^2$

- a(6x - 5y)(x - 4y)
- a(x + 5y)(x - 4y)
- a(6x + 5y)(x - 4y)
- a(x + 5y)(x + 4y)

Using set notation, write the elements belonging to the set $\{x \mid x = n^2 + 1, n \text{ is a natural number less than or equal to } 5\}$

- ○ {1, 2, 10, 5, 17}
- ○ {2, 5, 10, 17, 26}
- ○ {1, 2, 3, 4, 5}
- ○ {2, 5, 10, 17}

Suppose that $n \in \mathbb{N}$ and $n < 4$.
The degree of the polynomial $(3x^n y^4 - x^2 y + x^2 y^2).(y^n x^3 - x^n y + 5x^8)$

- 13
- 12
- n + 12
- (n + 4)(n + 3)

Select the correct property that describes the given equation.

$(8 \times 12) \times 3 = 8 \times (12 \times 3)$

- Associative property of multiplication
- Identity property of addition
- Inverse property of addition
- Commutative property of addition

Factor the polynomial $x^4 + 5x^2 - 36$ completely

- $(x-2)(x+2)(x^2+9)$
- $(x+2)(x^2+9)$
- $(x^2-4)(x^2+9)$
- $(x-2)(x+2)(x+3)(x-3)$

The set of irrational numbers from $\{-7, -\sqrt{5}, -2, -\frac{1}{6}, 0, 1, 2\frac{1}{3}, \sqrt{25}, \frac{17}{2}\}$ is

- $\{-7, -2\}$
- $\{-\sqrt{5}\}$
- $\{-\sqrt{5}, -\frac{1}{6}, 0, 2\frac{1}{3}, \sqrt{25}, \frac{17}{2}\}$
- $\{-\sqrt{5}, \sqrt{25}\}$

Factor: $9x^2 - 12x + 4$

- $(3x+1)(3x-4)$
- $(3x-2)^2$
- $(3x+2)^2$
- $(9x-4)(x+1)$

Let a, b real numbers. Give the condition that makes the equation $(3a + 1)x + 3 = 3x - b + 2$ an identity equation.

- $a \neq -\frac{2}{3}$ and $b \neq -1$
- $a = -\frac{2}{3}$ and $b = 1$
- $a = \frac{2}{3}$ and $b = -1$
- $a \neq \frac{2}{3}$ and $b \neq -1$

Let U = {1, 2, 3, 4, 5, 6} be the universal set, A = {1, 5} and B = {2, 4, 5}. Then (A' ∪ B) ∩ (φ')' is

- φ
- {2, 3, 4, 6}
- {1}
- {1,2, 4, 5}

Find the product $\frac{2x^2-4x-6}{x^2-4x+3} \cdot \frac{x-1}{x+1}$

- 1
- 2
- 3
- 4

If a, b and c are real numbers with $a = b$, then

- $a - c = -(b - c)$
- $a - c = b - c$
- $a - c < b - c$
- $a - c > b - c$

Let $x, y \in R$ and z a complex number. Give the values of x and y that makes z a pure imaginary complex number.

$$z = (x - \sqrt{5}) + (y - \sqrt{7})i - 1$$

- $x = 1 + \sqrt{5},\ y \in R$
- $x = 1 + \sqrt{5},\ y \neq \sqrt{7}$
- $x = 1 + \sqrt{5},\ y = \sqrt{7}$
- $x = \sqrt{5},\ y \neq \sqrt{7}$

Simplify the complex fraction $\dfrac{x^{-2} - y^{-1}}{xy}$

- $\dfrac{y - x^2}{x^3 y^2}$
- $\dfrac{y - x}{x^3 y^2}$
- $\dfrac{y - x^2}{x^2 y^2}$
- $\dfrac{y - x}{x^3 y}$

Solve the equation $27x^3 - 64 = 0$

- $\left\{\frac{-2+2i\sqrt{3}}{3}, -\frac{2+2i\sqrt{3}}{3}\right\}$
- $\left\{\frac{-2+2i\sqrt{3}}{3}, -\frac{2+2i\sqrt{3}}{3}, \frac{4}{3}\right\}$
- $\left\{\frac{-2+2i\sqrt{3}}{3}, \frac{2-2i\sqrt{3}}{3}, \frac{4}{3}\right\}$
- $\left\{\frac{2+2i\sqrt{3}}{3}, \frac{2-2i\sqrt{3}}{3}, -\frac{4}{3}\right\}$

Let x a real positive number.
Simplify the following expression by rationalizing the denominator.

$$\frac{\sqrt[3]{x}}{\sqrt[3]{x}-1}$$

- $\dfrac{x+\sqrt[3]{x^2}+\sqrt[3]{x}}{x-1}$
- $\dfrac{x+\sqrt[3]{x^2}-\sqrt[3]{x}}{x-1}$
- $\dfrac{x-\sqrt[3]{x^2}+\sqrt[3]{x}}{x-1}$
- $\dfrac{\sqrt[3]{x^2}+\sqrt[3]{x}+1}{x-1}$

Total questions in exam: 20 | Answered: 20

Question No. 1

Factor completely the polynomial $x^3y^2 - 64y^2$

- $y^2(x-4)(x^2+4x+16)$
- $y^2(x+4)(x^2+4x+16)$
- $(xy-8y)(xy+8y)$
- $(x-3)(x^2+3x+9)$

Question No. 2

Simplify the complex fraction $\dfrac{x^{-2}-y^{-1}}{xy}$

- $\dfrac{y-x^2}{x^2y^2}$
- $\dfrac{y-x^2}{x^3y^2}$
- $\dfrac{y-x}{x^3y^2}$
- $\dfrac{y-x}{x^3y}$

Question No. 3

Solve the equation $27x^3 - 64 = 0$

- $\{\frac{-2+2i\sqrt{3}}{3}, \frac{2-2i\sqrt{3}}{3}, \frac{4}{3}\}$
- $\{\frac{-2+2i\sqrt{3}}{3}, -\frac{2+2i\sqrt{3}}{3}\}$
- $\{\frac{-2+2i\sqrt{3}}{3}, -\frac{2+2i\sqrt{3}}{3}, \frac{4}{3}\}$
- $\{\frac{2+2i\sqrt{3}}{3}, \frac{2-2i\sqrt{3}}{3}, -\frac{4}{3}\}$

Question No. 4

Factor : $x^2 + 4x + 4$

- ○ $(x-4)(x+1)$
- ○ $(x-2)^2$
- ◉ $(x+4)(x+1)$
- ○ $(x+2)^2$

Question No. 5

The equation $6(x-2)=2-x$ is

- an identity
- a conditional equation
- a contradiction
- a quadratic equation

Question No. 6

Find the quotient $\frac{x+1}{x-1} \div \frac{x^2-1}{x^3-1}$

- $\frac{x^2-x+1}{x-1}$
- $\frac{x^2+x+1}{x-1}$
- $\frac{x^2+x+1}{x+1}$
- $\frac{x+1}{x^2-x+1}$

Question No. 7

The expression $x^6 - 2x^5 + 4$ can be classified as a

- trinomial
- monomial
- binomial
- non of these

uestion No. 10

The set of natural numbers from $\{-7, -\sqrt{5}, -2, -\frac{1}{6}, 0, 1, 2\frac{1}{3}, \sqrt{25}, \frac{17}{2}\}$ is

- $\{-\sqrt{5}, -\frac{1}{6}, 0, 2\frac{1}{3}, \sqrt{25}, \frac{17}{2}\}$
- $\{1, \sqrt{25}\}$
- $\{-\sqrt{5}\}$
- $\{-\sqrt{5}, \sqrt{25}\}$

Question No. 14

Suppose that $n \in \mathbb{N}$ and $n < 4$.
The degree of the polynomial $(3x^n y^4 - x^2 y + x^2 y^2).(y^n x^3 - x^n y + 5x^8)$

n + 12

13

12

(n + 4)(n + 3)

Question No. 8

Let $x \in \mathbb{Z}$. Simplify the following expression $a = 3i^{132x^2+4x-3}$

- $a = -3i$
- $a = -3$
- $a = 3i$
- $a = 3$

estion No. 13

ind the value of 'c' that will allow this polynomial to be written as a perfect square.

$$x^2 - \frac{1}{2}x + c$$

- $-\frac{1}{2}$
- $\frac{1}{4}$
- $\frac{1}{2}$
- $\frac{1}{16}$

Question No. 12

Let a, b real numbers. Give the condition that makes the equation $(3a + 1)x + 3 = 3x - b + 2$ an identity equation.

- $a = \frac{2}{3}$ and $b = -1$
- $a \neq -\frac{2}{3}$ and $b \neq -1$
- $a = -\frac{2}{3}$ and $b = 1$
- $a \neq \frac{2}{3}$ and $b \neq -1$

Question No. 11

Factor the polynomial $x^4 + 5x^2 - 36$ completely

- $(x^2 - 4)(x^2 + 9)$
- $(x - 2)(x + 2)(x^2 + 9)$
- $(x + 2)(x^2 + 9)$
- $(x - 2)(x + 2)(x + 3)(x - 3)$

Question No. 18

Let $a \in \mathbb{R}$ and $0 < a < 9$. Simplify the following expression $\sqrt{a - 6\sqrt{a} + 9}$

- $\sqrt{a} - 3$
- $\sqrt{a} + 3$
- $-\sqrt{a} - 3$
- $3 - \sqrt{a}$

Question No. 17

Using set notation, write the elements belonging to the set $\{x \mid x = n^2 + 1, n \text{ is a natural number less than or equal to } 5\}$

- {1, 2, 3, 4, 5}
- {1, 2, 10, 5, 17}
- {2, 5, 10, 17, 26}
- {2, 5, 10, 17}

Question No. 16

The domain of $\frac{x+1}{(x+3)(2x-3)}$ is

- $R \setminus \{-3, 3\}$
- $R \setminus \{-3, \frac{3}{2}\}$
- $R \setminus \{3, \frac{-3}{2}\}$
- $R \setminus \{-3\}$

Question No. 15

Let U = {–3,–2,–1, 0, 1, 2, 3, 4, 5, 6}, A = {–2, 0, 2, 4, 6}, B = {0, 1, 2, 3, 4, 5, 6} and C = {0,–1, 4,–3, 6,–2} .
Find (A ∩ B)' U (A ∩ C)'.

{–3,–2,–1, 1, 3, 5}

{0, 4, 6,–2}

{–3,–1, 1, 2, 3, 5}

{–3,–2,–1, 1, 3, 5, 2}

Question No. 2[redacted]

Let $x, y \in R$ and z a complex number. Give the values of x and y that makes z a pure imaginary complex number.

$$z = (x - \sqrt{5}) + (y - \sqrt{7})i - 1$$

- $x = 1 + \sqrt{5}, y = \sqrt{7}$
- $x = 1 + \sqrt{5}, y \in R$
- $x = 1 + \sqrt{5}, y \neq \sqrt{7}$
- $x = \sqrt{5}, y \neq \sqrt{7}$

Question No. 19

Simplify: (2-5i) - (3+4i) - (2+i)

- -3+10i
- 3+10i
- 3-10i
- -3-10i

Question No. 9

Select the correct property that describes the given equation.

$(8 \times 12) \times 3 = 8 \times (12 \times 3)$

- Inverse property of addition
- Associative property of multiplication
- Identity property of addition
- Commutative property of addition