تجميعات الرياضيات -101

الاختبار الأول

The degree of the quotient of the division

$$(7x^4 - 4x^3 + 6x - 5) \div (x + 2)$$ equals:

- 6
- 4
- 5
- 3

Evaluate $-\left(\frac{27x^3}{64}\right)^{-4/3}$

- $-\frac{256}{81x^4}$
- $\frac{81x^4}{256}$
- $-\frac{81x^4}{256}$
- $\frac{256}{81x^4}$

Perform this division $(6m^2+13m-15) \div (m+3)$

- $6m-5$
- $6m-5+\frac{4}{m-5}$
- $m-5$
- $6m+5$

Find the value of the discriminate for this equation $x^2 + 5x - 6 = 0$

- 7
- 49
- 0
- 1

Given that $A = \{2,5\}$ and $B = \{7\}$ then

- $A \cap B = \{7\}$
- $B \subseteq A$
- A and B are disjointsets
- $A \cup B = \{2,5\}$

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

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

Use the quadratic formula to solve this equation:

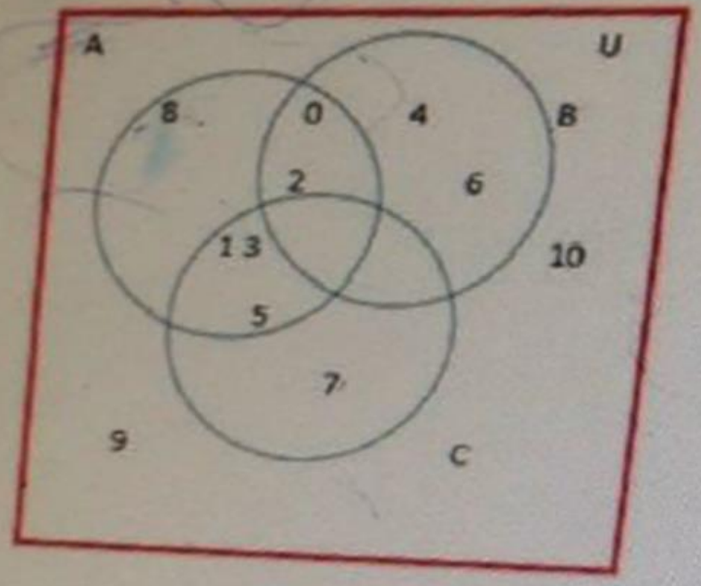
$$3 - x^2 = 4x$$

- $x = -2 \pm \sqrt{7}$
- $x = -2 \pm 2\sqrt{7}$
- $x = -1 \pm \sqrt{7}$
- $x = 2 \pm \sqrt{7}$

Factor : $(4x-y)^3-125$

- $((4x-y)+5)((4x-y)^2-5(4x-y)+25)$
- $((4x-y)+5)((4x-y)^2-10(4x-y)+25)$
- $((4x-y)-5)((4x-y)^2+5(4x-y)+25)$
- $((4x-y)-5)((4x-y)^2+10(4x-y)+25)$

Use the Venn diagram to determine $A \cap B'$

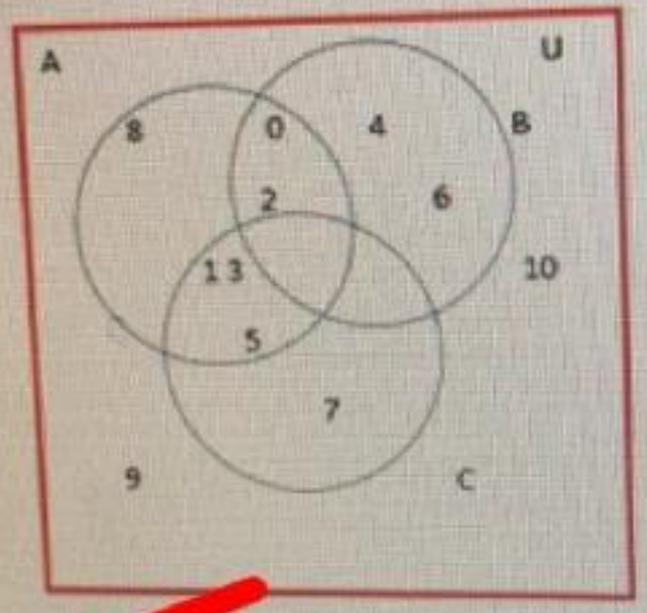


- $A \cap B' = \{0, 2\}$
- $A \cap B' = \{0, 1, 2, 3, 5\}$
- $A \cap B' = \{1, 3, 5, 8\}$
- $A \cap B' = \{\}$

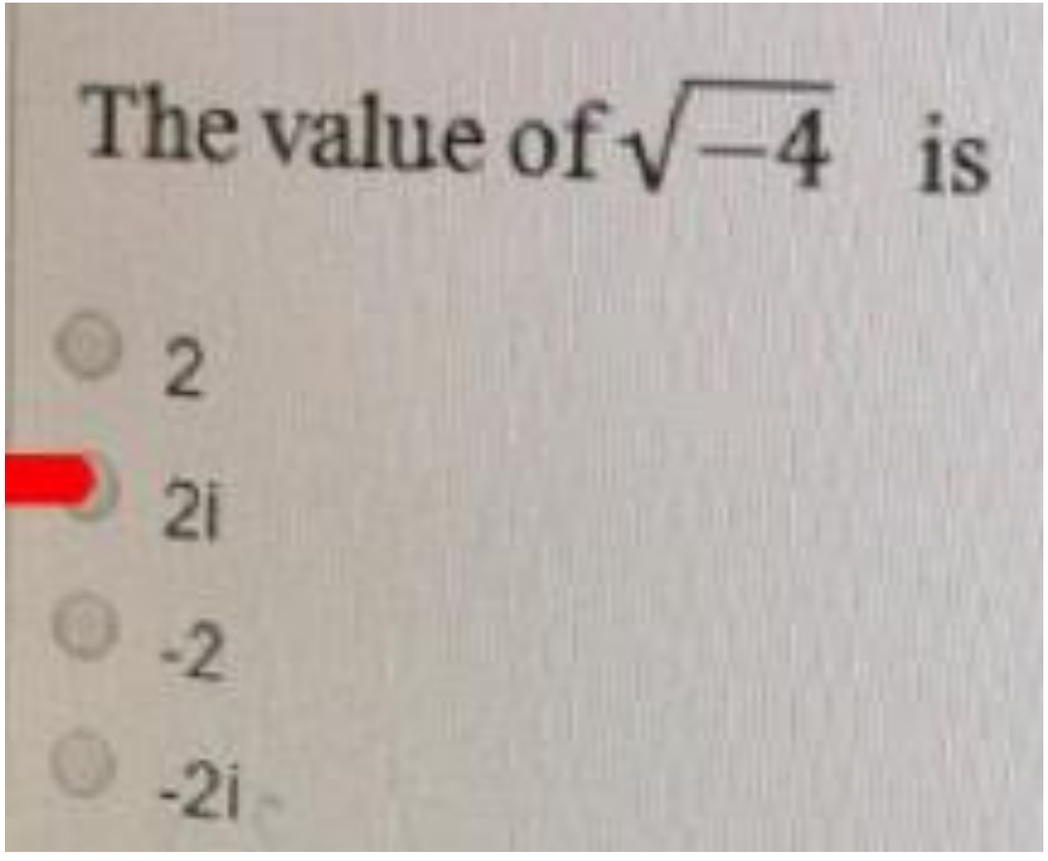
The solution set of the equation $6(x-2)=2-x$ is

- $\varnothing$
- $\{2\}$
- 2
- $\{2, -2\}$

Use the Venn diagram to determine U



- U = {9, 10}
- U = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
- U = { }
- U = {0, 1, 2, 3, 4, 5, 6, 7, 8}


The value of $\sqrt{-4}$ is
2
2i
-2
-2i

Factor: $6x^2 - x - 15$

- $(2x - 3)(3x - 5)$
- $(2x + 3)(3x - 5)$
- $(6x + 3)(x - 5)$
- $(6x - 3)(x + 5)$

Perform the indicated operation.

$$(-4 + 8i) \div -6i$$

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

Using set notation, the elements belonging to the set: {x| x is a natural number less than 2} are

- ∅
- {∅}
- {1}
- {0}

Simplify $\left[\frac{x^2y^{-2/3}}{x^{-1/2}y^{-3}}\right]^{-1/7}$

- $\frac{1}{x^{5/14}y^{1/3}}$
- $\frac{1}{x^{3/14}y^{1/3}}$
- $\frac{1}{x^{3/14}y^{11/21}}$
- $x^{5/14}y^{1/3}$

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

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

The solution set of the equation $2(x+3)=2x-6$ is

- $\varnothing$
- 1
- All real numbers
- $\{2,3\}$

Perform the indicated operations and Simplify. $\frac{a-b}{b-a} \div \frac{a^2+2ab+b^2}{a^2+ab}$

- $\frac{a}{a+b}$
- $\frac{-a+b}{a}$
- $\frac{-a}{a+b}$
- $\frac{a+b}{a}$

Which one of the following equations is a conditional linear equation?

- $3(5x-3)=15x+19$
- $x^2-1=0$
- $\frac{5}{3}x-\frac{4}{3}=11$
- $-2(x+6)+3x=x-12$

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

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

Solve $\frac{5x}{3} - x = \frac{x}{24} - \frac{7}{8}$

- $-\frac{21}{17}$
- $\frac{7}{5}$
- $\frac{21}{17}$
- $-\frac{7}{5}$

Simplify: $\dfrac{\frac{3}{4x} \quad \frac{4}{3}}{\frac{4}{9x} \quad \frac{1}{4x^2}}$

- $\dfrac{1}{3x}$
- $3x$
- $-\dfrac{1}{3x}$
- $-3x$

Find this product $\frac{6p-6}{p} \times \frac{2p^2}{9p-9}$

- $\frac{4p}{3}$
- $\frac{3}{4p}$
- $\frac{12p^3-12p^2}{9p^2-9p}$
- $\frac{54p^2+108p+54}{2p^2}$

Simplify: $\dfrac{\frac{2}{x-y}+\frac{1}{x+y}}{\frac{1}{x-y}}$

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

Which one of the following equations is an identity?

- $-2(x+6)+3x=x-12$
- $\frac{5}{3}x-\frac{4}{3}=11$
- $x^2-1=0$
- $3(5x-3)=15x+19$

Select the correct property that describes the given equation.

$x + (y + 3) = x + (3 + y)$

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

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

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

Simplify $\dfrac{x^2 \times y^{-\frac{5}{2}}}{\left(x^{\frac{1}{2}} \times y^{-1}\right)^2}$

- $y \cdot x^{-\frac{1}{3}}$
- $x^{\frac{1}{2}} y^{\frac{1}{6}}$
- $x^{\frac{1}{2}} \cdot y^{-\frac{5}{2}}$
- $x \cdot y^{\frac{1}{2}}$

Solve $A = P(1 + nr)$ for r

- $r = \frac{P - A}{Pn}$
- $r = \frac{Pn}{A - P}$
- $r = \frac{A - P}{Pn}$
- $r = \frac{A}{n}$

The exponent of $(2xy)^3$ is

- 3
- 6
- 2xy
- 2

Simplify the expression $\sqrt{(x-10)^2}$

- $x-10$
- $|x+10|$
- $x+10$
- $|x-10|$

The solution set of the equation $\frac{1}{20}(2x+5) = \frac{x+2}{5}$ is

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

If A={1,2,3,4,5,6} then

- $1 \notin A$
- $\{1,4\} \subseteq A$
- $\{1\} \in A$
- $\{0,1\} \subseteq A$

Factor completely: $y^4 - 13y^2 + 36$

- $(y - 2)(y - 3)(y + 3)(y + 2)$
- $(y^2 - 4)(y^2 - 9)$
- $(y^2 + 4)(y^2 + 9)$
- $(y^2 - 6)^2$

Solve $\frac{x-15}{5}+\frac{x+9}{9}=x+4$

- $\frac{54}{31}$
- $-\frac{216}{31}$
- $-\frac{270}{31}$
- $\frac{144}{31}$

Suppose that $n \in \mathbb{N}$ and $n < 4$. The degree of the polynomial

$$(x^n y^4 - 2x^2 y + x^3 y).(y^n x^2 - 3x^n y + 5y^9)$$ is

- n + 13
- 12
- 13
- (n + 4)(n + 2)

The imaginary unit i equal to

- -1
- $-\sqrt{-1}$
- $(-1)^2$
- $\sqrt{-1}$

The union $\{1, 2, 3, 5, 6, 7\} \cup \{4, 5, 6, 10\}$ is

- $\emptyset$
- $\{1, 2, 3, 4, 6, 7, 10\}$
- $\{5, 6\}$
- $\{1, 2, 3, 4, 5, 6, 7, 10\}$

Use the discriminate to determine the type of the solution for

$$4x^2 = 6x - 7$$

- 2 irrational solutions
- 2 complex solutions
- 1 rational solution
- 2 rational solutions

Solving the equation 2(3x-4a)+4b=5x+4(b-a) for x gives

- $x = \frac{b-a}{3b+5a}$
- $x = -4a$
- $x = 4a$
- $x = \frac{2a}{4b}$

Simplify $(-5p^4)(-8p^3)$

- $-40p^{12}$
- $40p^{12}$
- $40p^7$
- $-40p^7$

Determine the following intersection $\emptyset \cap \{6,7\} =$

- $\{7\}$
- $\{6\}$
- $\emptyset$
- $\{6,7\}$

Suppose x is a real number. Evaluate the expression $-3(x-1)^0$

- 3 if $x \neq 0$
- -3
- -3 if $x \neq 0$
- -3 if $x \neq 1$

The roots of $x^2 = -3x - 6$ are

- $\frac{3 \pm i\sqrt{15}}{2}$
- $\frac{-3 \pm i\sqrt{15}}{2}$
- $\frac{-3 \pm \sqrt{33}}{2}$
- $\frac{-3 \pm \sqrt{15}}{2}$

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

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

Perform the indicated operations $3p(8pq^4)^{1/3} - 2q(p^4q)^{1/3}$

- $4(pq)^{4/3}$
- $4pq^{4/3}$
- $(pq)^{4/3}$
- $4p^{4/3}q$

Suppose x is a real number. Evaluate the expression $-3(x-1)^0$

- -3 if $x \neq 1$
- -3
- 3 if $x \neq 0$
- -3 if $x \neq 0$

If U is a universal set then the complement of U is equal to

- $\emptyset$
- -1
- U
- 1

Simplify $\left(\frac{-4n^6m^4}{m^2}\right)^{-3/2}$

- is not a real number
- $-\frac{1}{8n^9m^3}$
- $\frac{1}{8n^9m^3}$
- $-8n^9m^3$

The base of $-5p^4$ is

- 4
- 5
- p
- -5p

Factor: $9 - 6cd + c^2d^2$

- $(3 + cd)(3 - cd)$
- $(3 + cd)\ (cd - 3)$
- $(3 - cd)^2$
- $(3 + cd)^2$

Solve $-5(-2x-5+6(x+1))=3x+7$

- $-\frac{12}{23}$
- -6
- -31
- $-\frac{62}{23}$