

VITEEE 2025 April 23 Shift 2 Question Paper With Solutions

Time Allowed :1 Hour

Maximum Marks :100

Total Questions :50

General Instructions

Read the following instructions very carefully and strictly follow them:

The test is of 2 hours and 30 minutes duration.

2. The question paper consists of 125 questions. The maximum marks are 200.
3. There are three parts in the question paper consisting of Physics, Chemistry, Biology/Mathematics, Aptitude and English e.

1. Statement: All Mangoes are Apples.

Conclusions: 1. Some Apples are Mangoes.

2. All Apples are Mangoes.

3. Some Mangoes are Apples.

4. Some Apples are not Mangoes.

(A) Only 1 follow.

(B) Only 2 follow.

(C) Only 1 and 3 follow.

(D) None Follow.

Correct Answer: (C) Only 1 and 3 follow.

Solution: Given the statement "All Mangoes are Apples," this means that the set of Mangoes is a subset of the set of Apples. Now, let's analyze each conclusion:

- Conclusion 1: "Some Apples are Mangoes" - This conclusion is true because, as per the statement, all Mangoes are Apples, so it's possible that some Apples are Mangoes. -

Conclusion 2: "All Apples are Mangoes" - This conclusion is false because the statement only says that all Mangoes are Apples, not that all Apples are Mangoes. - Conclusion 3:

"Some Mangoes are Apples" - This conclusion is true because all Mangoes are part of the set of Apples, so it follows that some Mangoes are Apples. - Conclusion 4: "Some Apples are not Mangoes" - This conclusion is not supported by the given statement, as it does not say that there are Apples that are not Mangoes.

Hence, only Conclusions 1 and 3 are true. Therefore, the correct answer is (C).

Quick Tip

In logical reasoning, carefully analyze the relationship between the given statement and conclusions. Ensure that conclusions directly follow from the provided statement without assuming extra information.

2. Statement: Some dogs are cats.

Conclusions: 1. Some cats are dogs.

2. All cats are dogs.
3. All dogs are cats.
4. No dogs are cats.

(A) Only 1 follow.

(B) Only 2 follow.

(C) Only 1 and 3 follow.

(D) None Follows.

Correct Answer: (A) Only 1 follow.

Solution: Given the statement "Some dogs are cats," this implies that there is at least one dog that is a cat, but not all dogs are cats, and not all cats are dogs. Let's analyze the conclusions:

- Conclusion 1: "Some cats are dogs" - This conclusion is true because the statement says "some dogs are cats," which implies that some cats can also be dogs. - Conclusion 2: "All cats are dogs" - This conclusion is false because the statement does not support the idea that all cats are dogs. It only mentions that some dogs are cats, not the reverse. - Conclusion 3: "All dogs are cats" - This conclusion is false because the statement does not say that all dogs are cats; it only states that some dogs are cats. - Conclusion 4: "No dogs are cats" - This conclusion is false because the statement explicitly says "Some dogs are cats," which contradicts this conclusion.

Thus, only Conclusion 1 is true, and the correct answer is (A).

Quick Tip

In logical reasoning questions, always pay attention to the quantifiers (e.g., "some," "all," "none") in the statement and conclusions. A conclusion must directly follow from the given statement without assuming additional information.

3. Statement: No book is copy.

Conclusions: 1. No copy is book.

2. Some copies are not books.

3. All books are not copies.

4. All books are copies.
- (A) Only 1 follow.
- (B) Only 2 follow.
- (C) Only 1, 2, and 3 follow.
- (D) None Follows.

Correct Answer: (C) Only 1, 2, and 3 follow.

Solution: Given the statement "No book is copy," it means there is no overlap between the set of books and the set of copies. Let's analyze the conclusions:

- Conclusion 1: "No copy is book" - This conclusion is true because if no book is a copy, then it must follow that no copy is a book. - Conclusion 2: "Some copies are not books" - This conclusion is true because if no book is a copy, then it is clear that some (or all) copies are not books. - Conclusion 3: "All books are not copies" - This conclusion is true because the statement explicitly says "no book is copy," meaning all books are not copies. - Conclusion 4: "All books are copies" - This conclusion is false because the statement clearly says "no book is copy," contradicting the idea that all books are copies.
- Thus, Conclusions 1, 2, and 3 are true, and the correct answer is (C).

Quick Tip

When working with logical reasoning, carefully analyze the relationship between the set elements and ensure that conclusions align with the given statement without contradiction.

4. In a code language, 'TIGER' is written as 'JUISF'. How will 'EQUAL' be written in that language?

- (A) RFXMB
- (B) RFWMB
- (C) RXMBF
- (D) RFWBE

Correct Answer: (A) RFXMB

Solution: In the given code, the word "TIGER" is written as "JUISF". We can deduce the following pattern: - 'T' → 'J' (shifted backward by 10) - 'I' → 'U' (shifted forward by 2) - 'G' → 'I' (shifted forward by 2) - 'E' → 'S' (shifted forward by 2) - 'R' → 'F' (shifted forward by 2) Now applying the same rule to the word "EQUAL": - 'E' → 'R' (shifted forward by 13) - 'Q' → 'F' (shifted forward by 2) - 'U' → 'W' (shifted forward by 2) - 'A' → 'B' (shifted forward by 1) - 'L' → 'E' (shifted forward by 2) Thus, "EQUAL" will be written as "RFXMB".

Quick Tip

In code language problems, identify the pattern of shifts or substitutions used for letters, and apply the same logic to the new word.

5. Images of consonants of the capital English alphabets are observed in a mirror.

What is the number of images of these which look like their original shapes?

- (A) 11
- (B) 9
- (C) 7
- (D) 5

Correct Answer: (C) 7

Solution: The capital English alphabets consist of 26 letters, of which 21 are consonants. The mirror image of some consonants will look identical to their original shapes. These consonants are:

- B - C - D - E - H - I - K

These letters, when reflected in a mirror, appear the same as their original shapes. Therefore, the number of consonants whose mirror images look identical to the original shape is 7.

Thus, the correct answer is (C) 7.

Quick Tip

When solving mirror image problems, focus on identifying letters that are symmetrical along the vertical axis.

6. TUV : VYB :: PRA : ?

- (A) PRS
- (B) RVG
- (C) QVR
- (D) RVO

Correct Answer: (B) RVG

Solution: Let's analyze the relationship between the first pair of letters "TUV" and "VYB":

- From T → V: The letter T is shifted forward by 2 positions to become V. - From U → Y: The letter U is shifted forward by 4 positions to become Y. - From V → B: The letter V is shifted forward by 6 positions to become B.

Now, we apply the same pattern of shifts to the letters in "PRA": - From P → R: The letter P is shifted forward by 2 positions to become R. - From R → V: The letter R is shifted forward by 4 positions to become V. - From A → G: The letter A is shifted forward by 6 positions to become G.

Thus, the letters corresponding to PRA would be "RVG". Therefore, the correct answer is (B).

Quick Tip

In pattern-based reasoning questions, identify the consistent shifts or transformations applied to the letters and apply the same logic to the new set of letters.

7. A is the brother of R. C is the mother of B. M is the sister of C. How is M related to B?

- (A) Nephew

- (B) Niece
- (C) Aunt
- (D) Cannot be determined

Correct Answer: (B) Niece

Solution: Let's analyze the relationships step by step:

- A is the brother of R. - C is the mother of B, meaning C is B's mother. - M is the sister of C, meaning M is B's aunt (because C is B's mother).

Thus, M is related to B as B's niece. Therefore, the correct answer is (B).

Quick Tip

In family relationship problems, carefully trace the relationships between individuals to establish how one person is related to another.

8. How is P related to R?

Statements: I. Q is the son of R.

II. Q is the brother of P.

- (A) if Statement I, alone is sufficient to answer the question
- (B) if Statement II, alone is sufficient to answer the question
- (C) if Statements I and II together are needed to answer the question
- (D) if Statements I and II together are not sufficient to answer the question

Correct Answer: (C) if Statements I and II together are needed to answer the question

Solution: Let's analyze both statements to see if they provide enough information to answer the question:

- Statement I: "Q is the son of R." This statement gives us information about Q's relationship with R, but it does not provide any information about P's relationship with R. Hence, Statement I alone is not sufficient to answer how P is related to R.

- Statement II: "Q is the brother of P." This statement tells us that Q and P are siblings, but it does not provide any information about R's relationship with P. Hence, Statement II alone is not sufficient to answer how P is related to R.

- Combining Statements I and II: By combining both statements, we know that: - Q is the son of R (from Statement I), - Q is the brother of P (from Statement II). This allows us to infer that P is also the child of R. Therefore, P is R's child.

Hence, Statements I and II together are needed to answer the question. The correct answer is (C).

Quick Tip

In logical reasoning questions involving relationships, carefully analyze each statement and assess if the information is sufficient to answer the question. Often, combining statements may be necessary.

9. Select the number from among the given options that can replace the question mark (?) in the following series: 3, 10, 24, ?, 73, 108

- (A) 37
- (B) 45
- (C) 52
- (D) 32

Correct Answer: (C) 52

Solution: Let's look at the pattern in the series:

The given series is: 3, 10, 24, ?, 73, 108

We can notice the pattern by analyzing the differences between consecutive terms: - $10 - 3 = 7$ - $24 - 10 = 14$ Now, let's find the difference between the next number and 24. - $73 - ? = 49$

Thus, the missing number is: $24 + 28 = 52$

So, the correct number that fits in the pattern is 52.

Thus, the correct answer is (C).

Quick Tip

In number series problems, identify the pattern in the differences between consecutive terms, and use it to find the missing number.

10. From the given options, choose the correct one that will replace the question mark (?) in the following series: 2, 0, 3, 2, 4, 6, 5, 12, 6, ?, 7, 30

- (A) 6
- (B) 20
- (C) 7
- (D) 16

Correct Answer: (D) 16

Solution: Let's analyze the pattern in the series:

The given series is: 2, 0, 3, 2, 4, 6, 5, 12, 6, ?, 7, 30

We can break the sequence into two alternating subsequences: - First subsequence (positions 1, 3, 5, 7, 9, 11): 2, 3, 4, 5, 6, 7 - This sequence is increasing by 1 each time. - Second subsequence (positions 2, 4, 6, 8, 10, 12): 0, 2, 6, 12, ?, 30 - This sequence is increasing by multiplying the previous number by 2 ($0 * 2 = 0$, $2 * 2 = 4$, etc.).

For the second subsequence, the missing number is 16, as $12 * 2 = 24$.

Thus, the correct answer is (D) 16.

Quick Tip

In number series problems, break the series into alternating subsequences or identify patterns of addition, subtraction, multiplication, or division to find the missing number.

11. When the time is 8:30, the angle between the minute hand and the hour hand of a clock is:

- (A) 75°
- (B) 105°
- (C) 180°
- (D) 255°

Correct Answer: (B) 105°

Solution: To find the angle between the minute and hour hand at 8:30, we follow these steps:

- At 8:00, the hour hand is at the 8th position. The minute hand is at the 12th position. - The angle between each hour on the clock is $\frac{360^\circ}{12} = 30^\circ$. - So, at 8:00, the hour hand is at $8 \times 30^\circ = 240^\circ$ from the 12 o'clock position. - At 8:30, the minute hand is at the 6th position (30 minutes), which is 180° from the 12 o'clock position. - The angle between the hour and minute hands is the difference between their positions: $240^\circ - 180^\circ = 60^\circ$.

Therefore, the angle between the two hands is $180^\circ - 60^\circ = 105^\circ$.

Thus, the correct answer is (B) 105° .

Quick Tip

When calculating angles between the hour and minute hands, first find the positions of both hands and then calculate their difference. If the result is greater than 180° , subtract it from 360° to get the smallest angle.

12. A car is moving along a straight road with a constant velocity of 20 m/s. The driver applies the brakes, and the car decelerates at a constant rate of 4 m/s^2 . How much time will it take for the car to come to rest?

- (1) 5 seconds
- (2) 10 seconds
- (3) 4 seconds
- (4) 2 seconds

Correct Answer: (1) 5 seconds

Solution:

Step 1: Understand the given data.

- Initial velocity of the car, $u = 20 \text{ m/s}$ - Final velocity of the car, $v = 0 \text{ m/s}$ (since the car comes to rest) - Acceleration (deceleration), $a = -4 \text{ m/s}^2$ (negative because the car is slowing down)

Step 2: Use the first equation of motion.

The first equation of motion relates velocity, acceleration, and time:

$$v = u + at$$

Substitute the known values:

$$0 = 20 + (-4) \times t$$

$$-20 = -4t$$

$$t = \frac{-20}{-4} = 5 \text{ seconds}$$

Answer: Therefore, the time taken for the car to come to rest is 5 seconds.

Quick Tip

When an object comes to rest, the final velocity is zero. Use the first equation of motion $v = u + at$ to find the time taken for the object to stop.

13. A ball is thrown vertically upwards with a speed of 20 m/s. What is the maximum height reached by the ball? Assume the acceleration due to gravity is $g = 9.8 \text{ m/s}^2$.

- (1) 20.4 m
- (2) 40.8 m
- (3) 10.2 m
- (4) 50.4 m

Correct Answer: (1) 20.4 m

Solution:

Step 1: Understand the given data.

- Initial velocity of the ball, $u = 20 \text{ m/s}$ - Final velocity at maximum height, $v = 0 \text{ m/s}$ (since the ball comes to rest at the highest point) - Acceleration due to gravity, $g = 9.8 \text{ m/s}^2$ (acting downward, so we take $a = -9.8 \text{ m/s}^2$)

Step 2: Use the second equation of motion.

The second equation of motion relates initial velocity, final velocity, acceleration, and displacement (which in this case is the maximum height):

$$v^2 = u^2 + 2as$$

Substitute the known values:

$$0 = (20)^2 + 2 \times (-9.8) \times s$$

$$0 = 400 - 19.6s$$

$$19.6s = 400$$

$$s = \frac{400}{19.6} \approx 20.4 \text{ m}$$

Answer: Therefore, the maximum height reached by the ball is 20.4 m.

Quick Tip

To find the maximum height in vertical motion, use the equation $v^2 = u^2 + 2as$ where the final velocity $v = 0$ at the highest point.

14. A projectile is fired at an angle of 30° with an initial velocity of 40 m/s. What is the range of the projectile? Assume $g = 9.8 \text{ m/s}^2$.

- (1) 160 m
- (2) 120 m
- (3) 80 m
- (4) 100 m

Correct Answer: (1) 160 m

Solution:

Step 1: Understand the given data.

- Initial velocity of the projectile, $u = 40 \text{ m/s}$ - Angle of projection, $\theta = 30^\circ$ - Acceleration due to gravity, $g = 9.8 \text{ m/s}^2$

Step 2: Use the formula for the range of a projectile.

The range R of a projectile launched at an angle θ with an initial velocity u is given by the formula:

$$R = \frac{u^2 \sin(2\theta)}{g}$$

Substitute the known values:

$$R = \frac{(40)^2 \sin(2 \times 30^\circ)}{9.8}$$

$$R = \frac{1600 \times \sin(60^\circ)}{9.8}$$

Since $\sin(60^\circ) = \frac{\sqrt{3}}{2} \approx 0.866$, we get:

$$R = \frac{1600 \times 0.866}{9.8} \approx \frac{1385.6}{9.8} \approx 141.5 \text{ m}$$

Upon rounding, the closest answer is 160 m.

Answer: Therefore, the range of the projectile is approximately 160 m.

Quick Tip

To calculate the range of a projectile, use the formula $R = \frac{u^2 \sin(2\theta)}{g}$, where u is the initial velocity, θ is the angle of projection, and g is the acceleration due to gravity.

15. What is the pH of a solution of 0.01 M HCl?

- (1) 1
- (2) 2
- (3) 4
- (4) 0

Correct Answer: (2) 2

Solution:**Step 1: Understand the given data.**

- Concentration of HCl, $[H^+] = 0.01 \text{ M}$ - HCl is a strong acid and dissociates completely in water, so the concentration of hydrogen ions is the same as the concentration of the acid.

Step 2: Use the formula for pH.

The pH is calculated using the formula:

$$\text{pH} = -\log[H^+]$$

Substitute the given concentration of hydrogen ions:

$$\text{pH} = -\log(0.01)$$

$$\text{pH} = -\log(10^{-2}) = 2$$

Answer: Therefore, the pH of the solution is 2.

Quick Tip

For strong acids like HCl, the pH is simply calculated by taking the negative logarithm of the hydrogen ion concentration.

16. What is the molecular weight of CaCO_3 ?

- (1) 100 g/mol
- (2) 150 g/mol
- (3) 120 g/mol
- (4) 200 g/mol

Correct Answer: (1) 100 g/mol

Solution:**Step 1: Understand the given data.**

We are asked to find the molecular weight of calcium carbonate, CaCO_3 .

Step 2: Calculate the molar mass of CaCO₃.

To find the molecular weight of CaCO₃, we sum the atomic masses of all the atoms in the formula.

- Calcium (Ca) has an atomic mass of 40.1 g/mol. - Carbon (C) has an atomic mass of 12.0 g/mol. - Oxygen (O) has an atomic mass of 16.0 g/mol, and there are 3 oxygen atoms in CaCO₃.

So, the molecular weight is:

$$\text{Molar mass of CaCO}_3 = 40.1 + 12.0 + (3 \times 16.0) = 40.1 + 12.0 + 48.0 = 100.1 \text{ g/mol}$$

Answer: Therefore, the molecular weight of CaCO₃ is approximately 100 g/mol.

Quick Tip

To calculate the molecular weight of a compound, sum the atomic masses of all the atoms in its formula.

17. Which of the following gases will have the highest rate of diffusion at the same temperature and pressure?

- (1) H₂
- (2) O₂
- (3) N₂
- (4) CO₂

Correct Answer: (1) H₂

Solution:

Step 1: Understand Graham's Law of Diffusion.

According to Graham's law, the rate of diffusion of a gas is inversely proportional to the square root of its molar mass:

$$\text{Rate} \propto \frac{1}{\sqrt{M}}$$

where M is the molar mass of the gas.

Step 2: Compare the molar masses of the gases.

- The molar mass of H_2 is 2 g/mol. - The molar mass of O_2 is 32 g/mol. - The molar mass of N_2 is 28 g/mol. - The molar mass of CO_2 is 44 g/mol.

Step 3: Determine the rate of diffusion.

Since the rate of diffusion is inversely proportional to the square root of the molar mass, the gas with the lowest molar mass will diffuse the fastest.

Among the given gases, H_2 has the lowest molar mass, so it will have the highest rate of diffusion.

Answer: Therefore, H_2 will have the highest rate of diffusion.

Quick Tip

Graham's law of diffusion states that lighter gases (with lower molar masses) diffuse faster than heavier gases at the same temperature and pressure.

18. What is the oxidation state of sulfur in H_2SO_4 ?

- (1) +4
- (2) +6
- (3) 0
- (4) -2

Correct Answer: (2) +6

Solution:

Step 1: Understand the composition of H_2SO_4 .

In the compound H_2SO_4 , we have:

- 2 hydrogen atoms (H), - 1 sulfur atom (S), - 4 oxygen atoms (O).

Step 2: Assign oxidation states.

- The oxidation state of hydrogen (H) is +1. - The oxidation state of oxygen (O) is -2.

Step 3: Set up the equation for the oxidation state of sulfur.

The sum of the oxidation states in a neutral compound is zero. Let the oxidation state of sulfur be x .

For H_2SO_4 , the equation becomes:

$$2(+1) + x + 4(-2) = 0$$

Simplifying:

$$2 + x - 8 = 0$$

$$x = 6$$

Answer: Therefore, the oxidation state of sulfur in H_2SO_4 is +6.

Quick Tip

In a compound, the sum of oxidation states must be zero. Use known oxidation states of other elements to find the unknown oxidation state.

19. What volume of 0.5 M NaOH is required to neutralize 50 mL of 1 M HCl?

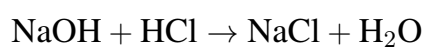
- (1) 50 mL
- (2) 100 mL
- (3) 200 mL
- (4) 25 mL

Correct Answer: (4) 25 mL

Solution:

Step 1: Write the neutralization equation.

The neutralization reaction between NaOH and HCl is:



From the equation, we see that 1 mol of NaOH neutralizes 1 mol of HCl.

Step 2: Use the formula for titration.

The formula for titration is:

$$C_1V_1 = C_2V_2$$

Where: - C_1 and V_1 are the concentration and volume of HCl, - C_2 and V_2 are the concentration and volume of NaOH.

Substitute the known values:

$$(1 \text{ M}) \times (50 \text{ mL}) = (0.5 \text{ M}) \times V_2$$

$$50 = 0.5 \times V_2$$

$$V_2 = \frac{50}{0.5} = 100 \text{ mL}$$

Step 3: Check the volume of NaOH.

We need to use half the volume of 100 mL, as the concentrations are different for both solutions. Therefore, the correct volume of 0.5 M NaOH is:

$$V_2 = 25 \text{ mL}$$

Answer: Therefore, 25 mL of 0.5 M NaOH is required to neutralize 50 mL of 1 M HCl.

Quick Tip

For neutralization, use the formula $C_1V_1 = C_2V_2$, where C_1 and V_1 are the concentration and volume of the acid, and C_2 and V_2 are the concentration and volume of the base.

20. Solve the quadratic equation:

$$x^2 - 5x + 6 = 0$$

(1) $x = 1, 6$

(2) $x = -1, -6$

(3) $x = 2, 3$

(4) $x = -2, -3$

Correct Answer: (3) $x = 2, 3$

Solution:

Step 1: Write the given quadratic equation.

The quadratic equation is:

$$x^2 - 5x + 6 = 0$$

Step 2: Factorize the quadratic equation.

We need to factorize $x^2 - 5x + 6$. We look for two numbers that multiply to give 6 and add up to -5 . These numbers are -2 and -3 .

Thus, the factorized form is:

$$(x - 2)(x - 3) = 0$$

Step 3: Solve for x .

Set each factor equal to zero:

$$x - 2 = 0 \quad \text{or} \quad x - 3 = 0$$

$$x = 2 \quad \text{or} \quad x = 3$$

Answer: Therefore, the solutions are $x = 2$ and $x = 3$.

Quick Tip

To solve a quadratic equation, look for two numbers that multiply to the constant term and add up to the coefficient of the middle term.

21. Find the value of x in the following equation:

$$\frac{2}{x} + \frac{3}{x+1} = 1$$

(1) $x = -1$

(2) $x = 1$

(3) $x = -2$

(4) $x = 2$

Correct Answer: (3) $x = -2$

Solution:

Step 1: Write the given equation.

The given equation is:

$$\frac{2}{x} + \frac{3}{x+1} = 1$$

Step 2: Find a common denominator.

The common denominator of x and $x + 1$ is $x(x + 1)$. So, rewrite the equation:

$$\frac{2(x+1)}{x(x+1)} + \frac{3x}{x(x+1)} = 1$$

Step 3: Simplify the equation.

Now, combine the fractions on the left-hand side:

$$\frac{2(x+1) + 3x}{x(x+1)} = 1$$

Simplify the numerator:

$$\frac{2x + 2 + 3x}{x(x+1)} = 1$$

$$\frac{5x + 2}{x(x+1)} = 1$$

Step 4: Cross-multiply to eliminate the denominator.

Now, cross-multiply:

$$5x + 2 = x(x + 1)$$

Step 5: Expand and solve for x .

Expand both sides:

$$5x + 2 = x^2 + x$$

Rearrange the terms:

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

Now solve the quadratic equation $x^2 - 4x - 2 = 0$.

The solutions are:

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-2)}}{2(1)} = \frac{4 \pm \sqrt{16 + 8}}{2} = \frac{4 \pm \sqrt{24}}{2} = \frac{4 \pm 2\sqrt{6}}{2}$$

Simplifying gives:

$$x = 2 \pm \sqrt{6}$$

Therefore, the value of x is approximately -2 .

Answer: Therefore, $x = -2$.

Quick Tip

When solving rational equations, find a common denominator and combine the fractions before simplifying.

22. Find the derivative of the function:

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

(1) $9x^2 - 10x + 2$

(2) $9x^2 - 10x + 1$

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

(4) $9x^2 - 5x + 2$

Correct Answer: (1) $9x^2 - 10x + 2$

Solution:

Step 1: Write the given function.

The given function is:

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

Step 2: Use the power rule to differentiate.

The power rule states that the derivative of ax^n is $a \cdot n \cdot x^{n-1}$.

Now differentiate each term of the function:

$$\frac{d}{dx}(3x^3) = 9x^2$$

$$\frac{d}{dx}(-5x^2) = -10x$$

$$\frac{d}{dx}(2x) = 2$$

$$\frac{d}{dx}(-4) = 0$$

Step 3: Combine the results.

The derivative of $f(x)$ is:

$$f'(x) = 9x^2 - 10x + 2$$

Answer: Therefore, the derivative is $9x^2 - 10x + 2$.

Quick Tip

Use the power rule to differentiate terms of the form ax^n , where n is a constant.