Unit 5: Algebraic Fractions

SSC-II Mathematics (Federal Board, National Book Foundation) | 35 MCQs

Choose the correct answer. The correct option is shown in **bold**. Each question carries one mark.

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1. A rational expression is an expression of the form p(x)/q(x) where

A. p(x) and q(x) are polynomials and q(x) ≠ 0
B. p(x) is always a constant
C. p(x) and q(x) are constants
D. q(x) = 0

2. Which of the following is a rational expression?

A. √x + 1
B. |x| + 1
C. (x + 1)/(x − 2)
D. $x^{1/2}$

3. $(x^2 - 9)/(x - 3)$ in simplest form is

A. x − 3
B. x + 3
C. (x + 3)/(x − 3)
D. $x^2 + 3$

4. $(x^2 - 4)/(x + 2)$ in simplest form is

A. x + 2
B. x − 4
C. x^2
D. x − 2

5. $(x^2 + 5x + 6)/(x + 2)$ in simplest form is

A. x + 3
B. x + 2
C. x − 3
D. x + 6

6. $(x^2 - 1)/(x^2 + x)$ in simplest form is

A. (x + 1)/x
B. (x − 1)/x
C. x/(x − 1)
D. x − 1

7. The rational expression (x + 1)/(x − 3) is undefined at

A. x = 0
B. x = −1
C. x = 3
D. x = −3

8. The rational expression $5/(x^2 - 4)$ is undefined at

A. x = ±4
B. x = 0
C. x = 4
D. x = ±2

9. 1/x + 1/y equals

A. 2/(x + y)
B. 1/(xy)
C. (x + y)/(xy)
D. (xy)/(x + y)

10. 1/x − 1/y equals

A. (x − y)/(xy)
B. (y − x)/(xy)
C. (x + y)/(xy)
D. 1/(x − y)

11. 2/(x + 1) + 3/(x + 1) equals

A. 5/(x + 1)
B. 6/(x + 1)
C. 5/(2x + 2)
D. $5/(x + 1)^2$

12. $x/(x + 1) + 1/(x + 1)$ equals

A. x B. $(x + 1)/2$

C. $x + 1$ **D. 1**

13. $1/(x - 1) + 1/(x + 1)$ equals

A. $2/x$ **B. $2x/(x^2 - 1)$**

C. $2/(x^2 - 1)$ D. $2x/(x^2 + 1)$

14. $1/(x - 1) - 1/(x + 1)$ equals

A. 0 B. $-2/(x^2 - 1)$

C. $2x/(x^2 - 1)$ **D. $2/(x^2 - 1)$**

15. $(x/3) \times (6/x^2)$ equals

A. $2/x$ B. $18/x$

C. $2x$ D. $x/2$

16. $(a/b) \div (c/d)$ equals

A. $bc/(ad)$ B. $ab/(cd)$

C. $ad/(bc)$ D. $ac/(bd)$

17. $(x^2 - 1)/x \times x/(x + 1)$ equals

A. $x^2 - 1$ B. $(x - 1)/x$

C. $x + 1$ **D. $x - 1$**

18. $(x + 2)/(x - 1) \div (x + 2)/(x + 3)$ equals

A. $(x + 2)^2/((x - 1)(x + 3))$ **B. $(x + 3)/(x - 1)$**

C. 1 D. $(x - 1)/(x + 3)$

19. The L.C.M. of $x^2 - 1$ and $x + 1$ is

A. $x^2 - 1$ B. $(x + 1)^2$

C. $(x - 1)(x + 1)^2$ D. $x + 1$

20. The L.C.M. of x and x^2 is

A. 1 B. x^3

C. x^2 D. x

21. The H.C.F. of $x^2 - 4$ and $x + 2$ is

A. $x^2 - 4$ B. 1

C. $x - 2$ **D. $x + 2$**

22. The solution of $x/2 = 6$ is

A. $x = 12$ B. $x = 4$

C. $x = 8$ D. $x = 3$

23. The solution of $3/x = 6$ is

A. $x = 2$ **B. $x = 1/2$**

C. $x = 18$ D. $x = 1/18$

24. The solution of $1/x + 1/2 = 1$ is

A. $x = 1/2$ B. $x = 1$

C. $x = 2$ D. $x = 3$

25. The solution of $(x + 1)/2 = (x - 1)/3$ is

A. $x = 5$ **B. $x = -5$**

C. $x = 1$ D. $x = -1$

26. The solution of $2/(x - 1) = 1$ is

A. $x = 2$ B. $x = 1$

C. $x = -1$ **D. $x = 3$**

27. The solution of $x/(x - 2) = 3$ is

A. $x = 3$ B. $x = 6$

C. $x = 2$ D. $x = -3$

28. The solution of $1/(x + 2) = 1/4$ is

A. $x = -2$ B. $x = 6$

C. $x = 2$ D. $x = 4$

29. Which value must be excluded from the solution set of $1/(x - 5) = 2$?

A. $x = -5$ **B. $x = 5$**

C. $x = 2$ D. $x = 0$

30. The sum of two numbers is 10 and the sum of their reciprocals is 5/12. If one number is x, the equation is

A. $1/x + 1/(10 - x) = 5/12$ B. $x + (10 - x) = 5/12$

C. $x(10 - x) = 5/12$ D. $1/x - 1/(10 - x) = 5/12$

31. The expression $(x^2 + 2x + 1)/(x + 1)$ simplifies to

A. $x + 2$ B. x

C. $x^2 + 1$ **D. $x + 1$**

32. The expression $(2x + 4)/(x + 2)$ simplifies to

A. $x + 2$ B. x

C. 2 D. $2x$

33. If $x = 2$, the value of $(x^2 - 1)/(x + 1)$ is

A. 3 **B. 1**

C. 0 D. 2

34. The reciprocal of $(x + 1)/(x - 1)$ is

A. $(x - 1)/(x + 1)$ B. $(1 - x)/(1 + x)$

C. $-(x + 1)/(x - 1)$ D. $(x + 1)/(x - 1)$

35. A rational expression is in its lowest terms when its numerator and denominator have

A. no variables B. the same degree

C. equal values **D. no common factor other than 1**