Test (6) Mr. D

1. $3^x + 3^x + 3^x =$

(a) 9^x

(b) 3^{x+1}

(c) 9^{3x}

(d) 3^{3x}

2. If $P(x) = x^3 - x^2 - x + 1$ and $Q(x) = x^2 - 2x + 1$, then $\frac{Q(x)}{P(x)} =$

(a) $\frac{1}{x+1}$

(b) $\frac{1}{x^2+1}$

(c) $\frac{1}{x-1}$

(d) $\frac{1}{x^2-1}$

3. The solution set for $3x^2 - 7x + \frac{49}{12} = 0$ contains:

(a) Two Solution

(b) One Solution

(c) No Solutions

(d) None of the above

4. The solution set for the inequality $2 - \frac{1}{x} < 1$ is:

(a) $(1, \infty)$

(b) $(0,1)$

(c) $(1,2)$

(d) $(-\infty, 1)$

5. The solution set for $\frac{|x|}{x} + 2 = x$ contains:

(a) Infinite number of solutions

(b) Two solutions

(c) One solution

(d) None of the above

6. **The domain of** $f(x) = \frac{\sqrt{x}-7}{\sqrt{x}+8}$ **is:**

(a) $(-8, 7)$

(b) $\Re \setminus \{-8\}$

(c) $(49, 64)$

(d) $[0, \infty)$

7. $\frac{x^2+y^2}{x+y} =$

(a) $x + y$

(b) $x - y$

(c) $\frac{x+y}{2}$

(d) None of the above

8. **Let A and B be two cylinders where half of A's base diameter is quarter of B's base diameter. While the height of A is double the height of B. Which of the following statements is true?**

(a) Volume A is equal to volume B

(b) Volume A is half of volume B

(c) Volume A is quarter of volume B

(d) Volume A is double volume B

9. **81 kg of flour consists of oats and wheat flour. The ratio of wheat to oat flour is 7 to 2. How much oats should be added for the oats to be one third of the wheat flour?**

(a) $6\ kg$

(b) $9\ kg$

(c) $3\ kg$

(d) None of the above

10. **In a sale, prices were reduced by 20%. If the price of an item is 80 KD before the sale, then its price during the sale is:**

(a) $60\ KD$

(b) $64\ KD$

(c) $58\ KD$

(d) $66\ KD$

11. **A farmer has a certain amount of apples. If he sells 40% of the apples, 42 kg remain. What was the initial amount of apples?**

(a) $70\ kg$

(b) $60\ kg$

(c) $58\ kg$

(d) $64\ kg$

12. $\sqrt{x^2 - y^2} =$

(a) $|x - y|$

(b) $|x| - |y|$

(c) $|x + y|$

(d) None of the above

13. **20 loaves of bread were given to a group of 20 people consists of men, women and children. Each man, woman and child has been given three, two and half a loaf of bread respectively. How many children are in the group?**

(a) 5

(b) 9

(c) 13

(d) 10

14. **In a university, exams are conducted in two classrooms. If we send 10 students from classroom A to classroom B, then the number of students in both classrooms will be equal. However, if we send 20 students from classroom B to classroom A, the number of students in classroom A will be double the number of students in classroom B. How many students are in classroom A?**

(a) 80

(b) 100

(c) 60

(d) None of the above

15. If $x - y = 3$ and $x^2 + y^2 = 29$, then $xy =$

(a) 10

(b) 18

(c) 28

(d) None of the above

16. The minimum value of $P(x) = x^2 - 6x + 9$ is:

(a) -6

(b) 9

(c) *zero*

(d) None of the above

17. $\frac{a}{b} - \left(\frac{b}{a} - \frac{c}{a}\right) =$

(a) $\frac{a^2-b^2-bc}{ab}$

(b) $\frac{a^2+b^2-bc}{ab}$

(c) $\frac{a^2-b^2+bc}{ab}$

(d) None of the above

18. $\frac{1-3^{-2}}{3^{-1}+3^{-2}} =$

(a) 2

(b) -2

(c) $\frac{15}{4}$

(d) $\frac{-15}{4}$

19. If $f(x) = \frac{1}{2}(x + 7)$, then $f(2x - 7) =$

(a) 14

(b) x

(c) *zero*

(d) None of the above

20. Let $f(x) = (x^C)\left(x^{\frac{1}{C}}\right)$ where C is a nonzero constant.
If $f(2) = 4\sqrt{2}$, then $C =$

(a) 3

(b) 2

(c) 4

(d) 16