

1.  $3^x + 3^x + 3^x =$
- (a)  $9^x$  (c)  $9^{3x}$   
(b)  $3^{x+1}$  (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)  $\frac{1}{x+1}$  (c)  $\frac{1}{x-1}$   
(b)  $\frac{1}{x^2+1}$  (d)  $\frac{1}{x^2-1}$
3. The solution set for  $3x^2 - 7x + \frac{49}{12} = 0$  contains:
- (a) Two Solution (c) No Solutions  
(b) One Solution (d) None of the above
4. The solution set for the inequality  $2 - \frac{1}{x} < 1$  is:
- (a)  $(1, \infty)$  (c)  $(1, 2)$   
(b)  $(0, 1)$  (d)  $(-\infty, 1)$
5. The solution set for  $\frac{|x|}{x} + 2 = x$  contains:
- (a) Infinite number of solutions (c) One solution  
(b) Two solutions (d) None of the above

6. The domain of  $f(x) = \frac{\sqrt{x}-7}{\sqrt{x}+8}$  is:
- (a)  $(-8, 7)$  (c)  $(49, 64)$   
(b)  $\mathbb{R} \setminus \{-8\}$  (d)  $[0, \infty)$
7.  $\frac{x^2+y^2}{x+y} =$
- (a)  $x + y$  (c)  $\frac{x+y}{2}$   
(b)  $x - y$  (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  $B$  (c) Volume  $A$  is quarter of volume  $B$   
(b) Volume  $A$  is half 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 (c) 3 kg  
(b) 9 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 (c) 58 KD  
(b) 64 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 (c) 58 kg  
(b) 60 kg (d) 64 kg
12.  $\sqrt{x^2 - y^2} =$
- (a)  $|x - y|$  (c)  $|x + y|$   
(b)  $|x| - |y|$  (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 (c) 13  
(b) 9 (d) 14
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 (c) 60  
(b) 100 (d) None of the above
15. If  $x - y = 3$  and  $x^2 + y^2 = 29$ , then  $xy =$
- (a) 10 (c) 28  
(b) 18 (d) None of the above

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

(a) -6

(c) zero

(b) 9

(d) None of the above

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

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

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

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

(d) None of the above

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

(a) 2

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

(b) -2

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

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

(a) 14

(c) zero

(b)  $x$

(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

(c) 4

(b) 2

(d) 16