

**King Fahd University of Petroleum and Minerals**  
**Math Prep-Year Program**  
**Math 001-Term 062**

1. Solve the following equations:

a)  $2|2x+11|+12=9$

b)  $3|2x-10|-4=8$

2. If  $A = \frac{1}{2}(B+x)y$ , and  $y \neq 0$ , SOLVE FOR B

3. Solve the following equation:

$$\frac{x+12}{x(x-3)} + \frac{2}{x} = \frac{5}{x-3}$$

4. By completing the square,  $9x^2 - 12x - 1 = 0$  is written as  $(x+a)^2 = b$ .  
Find the value of:  $2a - b$

5. If  $-4$  is a solution of the equation:  $kx^2 + 10x - 8 = 0$ , find the value of  $k$

6. Solve  $4x^2 - 3x + 15 = x$  by completing the square

7. Solve the equation  $\sqrt{4x+1} - \sqrt{2x+4} = 1$

8. Which of the following is TRUE:

- a)  $3 + \frac{9}{y-3} = \frac{3y}{y-3}$  is an identity equation
- b)  $\frac{x}{x-4} + 1 = \frac{4}{x-4}$  has one real solution
- c)  $5|3x-1| + 16 = 3$  has two real solutions
- d)  $2x + \frac{2}{3} = \frac{6x+1}{3}$  is an identity equation
- e)  $\frac{5}{x-3} - \frac{3}{x-2} = \frac{4}{x-3}$  is a contradiction equation

9. Solve the following **equation**: 
$$\frac{3}{x+4} + \frac{4}{x+3} = \frac{4}{(x+3)(x+4)}$$

10. Solve the following for Y: 
$$\frac{S}{2} = \frac{XY + XZ + ZY}{X}$$

11. Find two consecutive natural numbers such that the difference of their reciprocals is  $\frac{1}{4}$  the reciprocal of the smaller number.

12. Solve the following equation: 
$$\frac{2x}{x+4} = 3 - \frac{8}{x+4}$$

13. If the sum of the roots of the quadratic equation  $ax^2 + bx + c = 0$  is -2, and the product of the roots is -8. Find **a**, **b** and **c**

14. Solve the equation:  $x - \sqrt{7-x} = 1$