Problems for Gateway #1: Solving Equations

1. All values of x that solve the equation $2x + 3 = 9$ are:

    (a) $x = 3$ only.

    (b) $x = 3$ and $x = -3$ only.

    (c)   all numbers greater than -3 but less than 3.

    (d) $x = 6$ only.

    (e)   There are no values of x that solve the given equation.

2. All values of x that solve the equation $3x - 4 = 8$ are:

    (a) $x = 4$ and $x = 12$ only.

    (b) $x = 4$ only.

    (c) $x = 12$ only.

    (d) $x = 6$ and $x = 12$ only.

    (e)   all numbers between $x = 4$ and $x = 12$.

3. All values of w that solve the equation $5w + 10 = 25$ are:

    (a) $w = 5$ only.

    (b) $w = 3$ and $w = 5$ only.

    (c) $w = 3$ only.

    (d) $w = 10$ and $w = 15$ only.

    (e) $w = 15$ only.

4. All values of x that solve the equation $x^2 + 2x + 1 = 0$ are:

    (a) $x = 1$ only.

    (b) $x = 1$ and $x = -1$ only.

    (c)   all numbers between 1 and -1.

    (d) $x = -1$ only.

    (e)   all numbers greater than 1.

5. All values of u that solve the equation $u^2 + 1 = 0$ are:

   (a) $u = -1$ only.

   (b) $u = -1$ and $u = 1$ only.

   (c)   all numbers between -1 and 1.

   (d) $u = 1$ only.

   (e)   There are no values of u that solve this equation.

6. All values of w that solve the equation $w^2 + 3w + 2 = 0$ are:

   (a) $w = 1$ and $w = 2$ only.

   (b) $w = 1$ only.

   (c) $w = 2$ only.

   (d) $w = -1$ only.

   (e) $w = -1$ and $w = -2$ only.

7. All values of x that solve the equation $x^3 = 8$ are:

   (a) $x = 2$ and $x = -2$ only.

   (b) $x = -2$ only.

   (c) $x = 2$ only.

   (d) $x = 0.5$ only.

   (e)   There are no values of x that solve this equation.

8. All values of u that solve the equation $u^4 = 81$ are:

   (a) $u = -3$ and $u = 3$ only.

   (b) $u = 3$ only.

   (c) $u = 9$ and $u = -9$ only.

   (d) $u = 9$ only.

   (e) $u = -9$ only.

9. All values of p that solve the equation $p^{1/2} = 4$ are:

(a) $p = 2$ only.

(b) $p = 2$ and $p = -2$ only.

(c) $p = 16$ and $p = -16$ only.

(d) $p = 16$ only.

(e) $p = -2$ only.

10. All values of q that solve the equation $q^3 - 2 = 25$ are:

(a) $q = 5$ and $q = -5$ only.

(b) $q = 3$ only.

(c) $q = 3$ and $q = -3$ only.

(d) $q = 5$ only.

(e) $q = -5$ only.

11. All values of x that solve the equation $\dfrac{1}{x-3} = 1$ are:

(a) $x = 2$ and $x = 4$ only.

(b) $x = 4$ only.

(c) $x = 2$ only.

(d) $x = 3$.

(e) There are no solutions to this equation.

12. All values of x that solve the equation $\dfrac{1}{x^2 + 2} = -3$ are:

(a) $x = 1$ only.

(b) $x = -1$ only.

(c) $x = 1$ and $x = -1$ only.

(d) $x = -\sqrt{\frac{4}{3}}$

(e) There are no solutions to this equation.

13. All values of x that solve the equation $\dfrac{x}{x+1} = 2$ are:

(a) $x = 1$ and $x = 2$ only.

(b) $x = 2$ only.

(c) $x = 2$ and $x = -2$ only.

(d) $x = -2$ only.

(e) There are no solutions to this equation.

14. All values of x that solve the equation $\dfrac{-1}{x+2} = x$ are:

(a) $x = -1$ only.

(b) $x = 1$ or $x = -1$.

(c) $x = 0$ and $x = 2$ only.

(d) $x = -2$ only.

(e) There are no solutions to this equation.

15. All values of x that solve the equation $\dfrac{1}{x+1} = 1$ are:

(a) $x = -1$ and $x = 0$ only.

(b) $x = -1$ only.

(c) $x = 0$ only.

(d) $x = 1$ and $x = -1$ only.

(e) There are no solutions to this equation.

Answers:

1.	A	**2.**	B	**3.**	C	**4.**	D	**5.**	E	**6.**	E
7.	C	**8.**	A	**9.**	D	**10.**	B	**11.**	B	**12.**	E
13.	D	**14.**	A	**15.**	C							