

Will not be collected

Solve the following equations. Find all solutions for the variable. Show steps

1) $c^2 + 5c - 66 = 0$

$$(c+11)(c-6) = 0$$

$$\begin{array}{r} c+11=0 \quad \text{or} \quad c-6=0 \\ \hline -11 \quad -11 \qquad \qquad +6 \quad +6 \\ \hline c = -11 \quad \text{or} \quad c = 6 \end{array}$$

2) $15x^2 + 29x + 12 = 0$

$$(3x+4)(5x+3) = 0$$

$$\begin{array}{r} 3x+4=0 \quad \text{or} \quad 5x+3=0 \\ \hline -4 \quad -4 \qquad \qquad -3 \quad -3 \\ \hline \frac{3x}{3} = \frac{-4}{3} \qquad \qquad \frac{5x}{5} = \frac{-3}{5} \end{array}$$

$$x = -\frac{4}{3} \quad \text{or} \quad x = -\frac{3}{5}$$

3) $54x^3 - 12x^2 = 0$

$$6x^2(9x-2) = 0$$

$$\begin{array}{r} \frac{6x^2}{6} = 0 \quad \text{or} \quad 9x-2=0 \\ \hline x^2 = 0 \qquad \qquad \qquad +2 \quad +2 \\ \hline x = 0 \qquad \qquad \qquad \frac{9x}{9} = \frac{2}{9} \\ \text{or} \qquad \qquad \qquad x = \frac{2}{9} \end{array}$$

4) $6a^2 - 27a + 30 = 0$

$$3(2a^2 - 9a + 10) = 0$$

$$3(2a-5)(a-2) = 0$$

$$\begin{array}{r} \cancel{3} \neq 0 \quad \text{or} \quad 2a-5=0 \quad \text{or} \quad a-2=0 \\ \hline +5 \quad +5 \qquad \qquad +2 \quad +2 \\ \hline \frac{2a}{2} = \frac{5}{2} \qquad \qquad a = 2 \\ \text{or} \\ a = \frac{5}{2} \end{array}$$

5) $8x^2 + 22x - 5 = -20$

$$\begin{array}{r} +20 \quad +20 \\ \hline 8x^2 + 22x + 15 = 0 \end{array}$$

$$(4x+5)(2x+3) = 0$$

$$\begin{array}{r} 4x+5=0 \quad \text{or} \quad 2x+3=0 \\ \hline -5 \quad -5 \qquad \qquad -3 \quad -3 \\ \hline \frac{4x}{4} = \frac{-5}{4} \qquad \qquad \frac{2x}{2} = \frac{-3}{2} \end{array}$$

$$x = -\frac{5}{4} \quad \text{or} \quad x = -\frac{3}{2}$$

6) $8x^3 + 10x^2 = 3x$

$$\begin{array}{r} -3x \quad -3x \\ \hline 8x^3 + 10x^2 - 3x = 0 \end{array}$$

$$x(8x^2 + 10x - 3) = 0$$

$$x(2x+3)(4x-1) = 0$$

$$\begin{array}{r} x=0 \quad \text{or} \quad 2x+3=0 \quad \text{or} \quad 4x-1=0 \\ \hline -3 \quad -3 \qquad \qquad +1 \quad +1 \\ \hline \frac{2x}{2} = \frac{-3}{2} \qquad \qquad \frac{4x}{4} = \frac{1}{4} \\ \text{or} \quad x = -\frac{3}{2} \quad \text{or} \quad x = \frac{1}{4} \end{array}$$

7) $-12x^4 + 38x^3 - 6x^2 = 0$

$$-2x^2(6x^2 - 19x + 3) = 0$$

$$-2x^2(6x - 1)(x - 3) = 0$$

$$\frac{-2x^2}{-2} = \frac{0}{-2} \quad \text{or} \quad \frac{6x-1}{+1 \ +1} = 0 \quad \text{or} \quad \frac{x-3}{+3 \ +3} = 0$$

$$x^2 = 0$$

$$x = 0$$

$$\frac{6x}{6} = \frac{1}{6} \quad \text{or} \quad x = \frac{1}{6}$$

or

$$x = 3$$

9) $x(2x - 5) + 3 = 2(3x - 1)$

$$2x^2 - 5x + 3 = 6x - 2$$

$$\frac{-6x + 2 \quad -6x + 2}{-6x + 2 \quad -6x + 2}$$

$$2x^2 - 11x + 5 = 0$$

$$(2x - 1)(x - 5) = 0$$

$$2x - 1 = 0 \quad \text{or} \quad x - 5 = 0$$

$$\frac{+1 \ +1}{+1 \ +1}$$

$$\frac{2x}{2} = \frac{1}{2}$$

$$x = \frac{1}{2}$$

or

$$\frac{+5 \ +5}{+5 \ +5}$$

$$x = 5$$

8) $5x^2 - 13x = 6$

$$\frac{-6 \ -6}{-6 \ -6}$$

$$5x^2 - 13x - 6 = 0$$

$$(5x + 2)(x - 3) = 0$$

$$5x + 2 = 0 \quad \text{or} \quad x - 3 = 0$$

$$\frac{-2 \ -2}{-2 \ -2} \quad \frac{+3 \ +3}{+3 \ +3}$$

$$\frac{5x}{5} = \frac{-2}{5}$$

$$x = 3$$

$$x = -\frac{2}{5} \quad \text{or}$$