

Solve the following quadratic equations:

1. $(x-4)(x+1) = 0$
 $x-4 = 0$ or $x+1 = 0$
 $x = 4$ or $x = -1$

2. $(2x-1)(3x+6) = 0$
 $2x-1 = 0$ or $3x+6 = 0$
 $2x = 1$ or $3x = -6$
 $x = \frac{1}{2}$ or $x = -2$

3. $x(2x-5) = 0$
 $x = 0$ or $2x-5 = 0$
 $x = 0$ or $2x = +5$
 $x = 0$ or $x = 2\frac{1}{2}$

4. $x^2-2x-3 = 0$ **Factors**
 $x^2-3x+1x-3 = 0$ 3×1 ✓
 $x(x-3)+1(x-3) = 0$
 $(x+1)(x-3) = 0$
 $x+1 = 0$ or $x-3 = 0$
 $x = -1$ or $x = 3$

5. $x^2-8x+12 = 0$ **Factors**
 $x^2-6x-2x+12 = 0$ 12×1
 $x(x-6)-2(x-6) = 0$ 6×2 ✓
 $(x-6)(x-2) = 0$ 4×3
 $x = 6$ or $x = 2$

6. $x^2-4x-5 = 0$
 $\Leftrightarrow x^2-5x+1x-5 = 0$
 $\Leftrightarrow x(x-5)+1(x-5) = 0$
 $\Leftrightarrow (x-5)(x+1) = 0$
 $\Leftrightarrow x = 5$ or $x = -1$

7. $x^2-2x-8 = 0$
 $\Leftrightarrow x^2-4x+2x-8 = 0$
 $\Leftrightarrow x(x-4)+2(x-4) = 0$
 $\Leftrightarrow (x-4)(x+2) = 0$
 $\Leftrightarrow x = 4$ or $x = -2$

8. $x^2+2x-15 = 0$
 $\Leftrightarrow x^2+5x-3x-15 = 0$
 $\Leftrightarrow x(x+5)-3(x+5) = 0$
 $\Leftrightarrow (x+5)(x-3) = 0$
 $\Leftrightarrow x = -5$ or $x = 3$

9. $2x^2-5x+2 = 0$
 $\Leftrightarrow 2x^2-4x-1x+2 = 0$
 $\Leftrightarrow 2x(x-2)-1(x-2) = 0$
 $\Leftrightarrow (x-2)(2x-1) = 0$
 $\Leftrightarrow x = 2$ or $x = \frac{1}{2}$

10. $6x^2-x-2 = 0$
 $\Leftrightarrow 6x^2+3x-4x-2 = 0$
 $\Leftrightarrow 3x(2x+1)-2(2x+1) = 0$
 $\Leftrightarrow (3x-2)(2x+1) = 0$
 $\Leftrightarrow x = \frac{2}{3}$ or $x = -\frac{1}{2}$

RW:
 $1 \times 5 = 5$
Factors
 5×1 ✓

$1 \times 8 = 8$
Factors
 8×1
 4×2 ✓

15
Factors
 15×1
 5×3 ✓

$2 \times 2 = 4$
Factors
 4×1 ✓
 2×2

$6 \times 2 = 12$
Factors
 12×1
 6×2
 4×3 ✓

11. $4x^2 - 29x + 7 = 0$
 $4x^2 - 28x - 1x + 7 = 0$
 $4x(x-7) - 1(x-7) = 0$
 $(4x-1)(x-7) = 0$
 $x = \frac{1}{4}$ or $x = 7$

RW:
 $4 \times 7 = 28$
 Factors
 28×1
 14×2
 7×4 ✓

12. $9x^2 - 9x - 28 = 0$
 $9x^2 + 12x - 21x - 28 = 0$
 $3x(3x+4) - 7(3x+4) = 0$
 $(3x-7)(3x+4) = 0$
 $x = 2.33$ or $x = -1.33$

252
 Factors
 28×9
 21×12 ✓

13. $4x^2 - 12x + 5 = 0$
 $4x^2 - 10x - 2x + 5 = 0$
 $2x(2x-5) - 1(2x-5) = 0$
 $(2x-1)(2x-5) = 0$
 $x = \frac{1}{2}$ or $x = 2\frac{1}{2}$

$4 \times 5 = 20$
 Factors
 20×1
 10×2 ✓
 5×4

14. $3x^2 - 13x - 10 = 0$
 $3x^2 - 15x + 2x - 10 = 0$
 $3x(x-5) + 2(x-5) = 0$
 $(3x+2)(x-5) = 0$
 $x = -0.667$ or $x = 5$

30
 Factors
 30×1
 15×2
 10×3 ✓

15. $6x^2 + 17x - 3 = 0$
 $6x^2 + 18x - 1x - 3 = 0$
 $6x(x+3) - 1(x+3) = 0$
 $(6x-1)(x+3) = 0$
 $x = 0.167$ or $x = -3$

$6 \times 3 = 18$
 Factors
 18×1
 9×2
 6×3

18. $3x^2 + 4x = 0$
 $x(3x+4) = 0$
 $x = 0$ or $3x+4 = 0$
 $x = 0$ or $x = -\frac{4}{3}$

$3x+4 = 0$
 $\Leftrightarrow x = -\frac{4}{3}$

19. $2x^2 - 9x = 0$
 $x(2x-9) = 0$
 $x = 0$ or $2x-9 = 0$
 $x = 0$ or $x = \frac{9}{2}$

20. $3x^2 + 4x = 0$
 $x(3x+4) = 0$
 $x = 0$ or $3x+4 = 0$
 $x = 0$ or $x = -\frac{4}{3}$

21. $2x^2 - 9x = 0$
 $x(2x-9) = 0$
 $x = 0$ or $2x-9 = 0$
 $x = 0$ or $x = \frac{9}{2}$