abc-Formel (Mitternachtsformel)

Stufe 3: Wurzeln, umformen nötig

Name: _____ Datum: _____

Löse die Gleichungen mit der abc-Formel: x = (–b ± Wurzel (b² – 4ac)) : (2a). Bringe sie vorher in die Form ax² + bx + c = 0.

1) $2x^2 - 4x = 1$ _____

2) $3x^2 + 5x = 3$ _____

3) $5x^2 + 2 = 8x$ _____

4) $5x^2 - 2 = -5x$ _____

5) $2x^2 - 3x = 7$ _____

6) $3x^2 - 6x = 1$ _____

7) $3x^2 + 8x = 9$ _____

8) $3x^2 + 7x = -3$ _____

9) $-2x^2 = -9$ _____

10) $2x^2 - 7 = -7x$ _____

11) $-2x^2 + 4 = 4x$ _____

12) $-2x^2 - 5x = -9$ _____

13) $-2x^2 + 7 = -6x$ _____

14) $3x^2 + 3 = -7x$ _____

15) $-2x^2 + 3 = -9x$ _____

16) $-2x^2 - x = -9$ _____

17) $3x^2 - 4x = 3$ _____

18) $3x^2 = 2$ _____

19) $2x^2 - 5x = 9$ _____

20) $3x^2 - 1 = -6x$ _____

21) $2x^2 - x = 9$ _____

22) $2x^2 + 1 = 9x$ _____

23) $2x^2 + 7x = 5$ _____

24) $-2x^2 + 4x = -4$ _____

25) $2x^2 - 6 = 5x$ _____

26) $2x^2 - 9 = x$ _____

27) $3x^2 - 3 = -4x$ _____

28) $2x^2 + 8x = -5$ _____

29) $5x^2 - 8x = -2$ _____

30) $3x^2 - 5x = 3$ _____

31) $5x^2 - 6x = 3$ _____

32) $-2x^2 + 6x = -7$ _____

Lösungen: abc-Formel (Mitternachtsformel)

Stufe 3: Wurzeln, umformen nötig

1) $2x^2 - 4x = 1 \quad \Rightarrow \quad x_{1,2} = 1 \pm \frac{\sqrt{6}}{2}$

2) $3x^2 + 5x = 3 \quad \Rightarrow \quad x_{1,2} = -\frac{5}{6} \pm \frac{\sqrt{61}}{6}$

3) $5x^2 + 2 = 8x \quad \Rightarrow \quad x_{1,2} = \frac{4}{5} \pm \frac{\sqrt{6}}{5}$

4) $5x^2 - 2 = -5x \quad \Rightarrow \quad x_{1,2} = -\frac{1}{2} \pm \frac{\sqrt{65}}{10}$

5) $2x^2 - 3x = 7 \quad \Rightarrow \quad x_{1,2} = \frac{3}{4} \pm \frac{\sqrt{65}}{4}$

6) $3x^2 - 6x = 1 \quad \Rightarrow \quad x_{1,2} = 1 \pm \frac{2\sqrt{3}}{3}$

7) $3x^2 + 8x = 9 \quad \Rightarrow \quad x_{1,2} = -\frac{4}{3} \pm \frac{\sqrt{43}}{3}$

8) $3x^2 + 7x = -3 \quad \Rightarrow \quad x_{1,2} = -\frac{7}{6} \pm \frac{\sqrt{13}}{6}$

9) $-2x^2 = -9 \quad \Rightarrow \quad x_{1,2} = \pm\frac{3\sqrt{2}}{2}$

10) $2x^2 - 7 = -7x \quad \Rightarrow \quad x_{1,2} = -\frac{7}{4} \pm \frac{\sqrt{105}}{4}$

11) $-2x^2 + 4 = 4x \quad \Rightarrow \quad x_{1,2} = -1 \pm \sqrt{3}$

12) $-2x^2 - 5x = -9 \quad \Rightarrow \quad x_{1,2} = -\frac{5}{4} \pm \frac{\sqrt{97}}{4}$

13) $-2x^2 + 7 = -6x \quad \Rightarrow \quad x_{1,2} = \frac{3}{2} \pm \frac{\sqrt{23}}{2}$

14) $3x^2 + 3 = -7x \quad \Rightarrow \quad x_{1,2} = -\frac{7}{6} \pm \frac{\sqrt{13}}{6}$

15) $-2x^2 + 3 = -9x \quad \Rightarrow \quad x_{1,2} = \frac{9}{4} \pm \frac{\sqrt{105}}{4}$

16) $-2x^2 - x = -9 \quad \Rightarrow \quad x_{1,2} = -\frac{1}{4} \pm \frac{\sqrt{73}}{4}$

17) $3x^2 - 4x = 3 \quad \Rightarrow \quad x_{1,2} = \frac{2}{3} \pm \frac{\sqrt{13}}{3}$

18) $3x^2 = 2 \quad \Rightarrow \quad x_{1,2} = \pm\frac{\sqrt{6}}{3}$

19) $2x^2 - 5x = 9 \quad \Rightarrow \quad x_{1,2} = \frac{5}{4} \pm \frac{\sqrt{97}}{4}$

20) $3x^2 - 1 = -6x \quad \Rightarrow \quad x_{1,2} = -1 \pm \frac{2\sqrt{3}}{3}$

21) $2x^2 - x = 9 \quad \Rightarrow \quad x_{1,2} = \frac{1}{4} \pm \frac{\sqrt{73}}{4}$

22) $2x^2 + 1 = 9x \quad \Rightarrow \quad x_{1,2} = \frac{9}{4} \pm \frac{\sqrt{73}}{4}$

23) $2x^2 + 7x = 5 \quad \Rightarrow \quad x_{1,2} = -\frac{7}{4} \pm \frac{\sqrt{89}}{4}$

24) $-2x^2 + 4x = -4 \quad \Rightarrow \quad x_{1,2} = 1 \pm \sqrt{3}$

25) $2x^2 - 6 = 5x \quad \Rightarrow \quad x_{1,2} = \frac{5}{4} \pm \frac{\sqrt{73}}{4}$

26) $2x^2 - 9 = x \quad \Rightarrow \quad x_{1,2} = \frac{1}{4} \pm \frac{\sqrt{73}}{4}$

27) $3x^2 - 3 = -4x \quad \Rightarrow \quad x_{1,2} = -\frac{2}{3} \pm \frac{\sqrt{13}}{3}$

28) $2x^2 + 8x = -5 \quad \Rightarrow \quad x_{1,2} = -2 \pm \frac{\sqrt{6}}{2}$

29) $5x^2 - 8x = -2 \quad \Rightarrow \quad x_{1,2} = \frac{4}{5} \pm \frac{\sqrt{6}}{5}$

30) $3x^2 - 5x = 3 \quad \Rightarrow \quad x_{1,2} = \frac{5}{6} \pm \frac{\sqrt{61}}{6}$

31) $5x^2 - 6x = 3 \quad \Rightarrow \quad x_{1,2} = \frac{3}{5} \pm \frac{2\sqrt{6}}{5}$

32) $-2x^2 + 6x = -7 \quad \Rightarrow \quad x_{1,2} = \frac{3}{2} \pm \frac{\sqrt{23}}{2}$