

Solve By Factoring

Steps.

1. Set equation = 0 - Move everything to one side!
2. Factor
3. Set all "parts" equal to zero.
4. Solve.

Ex1. $(x-4)(x+2) = 0$

$$\begin{array}{r} x-4=0 \quad x+2=0 \\ +4 \quad +4 \quad -2 \quad -2 \\ \hline x=4 \quad x=-2 \end{array}$$

A: $x = 4, -2$

Ex2. $2x^2 + 8x = 0$

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

$$\begin{array}{l} \frac{2x}{2} = \frac{0}{2} \quad x+4=0 \\ x=0 \quad \quad \quad +4 \quad -4 \\ \hline x=-4 \end{array}$$

A: $x = 0, -4$

Ex3. $6n^2 = 15n$

$$\begin{array}{r} -15n \quad -15n \quad \frac{3n=0}{3} \quad 2n-5=0 \\ \hline 6n^2-15n=0 \quad n=0 \quad \frac{+5+5}{2} \\ 3n(2n-5)=0 \quad \frac{2n=5}{2} \\ n=\frac{5}{2} \end{array}$$

A: $n = 0, \frac{5}{2}$

Ex4. $a^2 + 5a = 0$

$$\begin{array}{l} a(a+5) = 0 \\ a=0 \quad a+5=0 \\ a=-5 \end{array}$$

A: $a = 0, -5$

Ex5. $x^2 - 22x = -121$

$$\begin{array}{l} x^2 - 22x + 121 = 0 \quad x-11=0 \\ x^2 - 11x - 11(x+121) = 0 \quad x=11 \\ x(x-11) - 11(x-11) \\ (x-11)(x-11) = 0 \end{array}$$

A: $x = 11$

Ex6. $4x^2 - 22x - 42 = 0$

$$\begin{array}{l} 2(2x^2 - 11x - 21) = 0 \quad 2x+3=0 \quad x-7=0 \\ 2x^2 - 14x + 3x - 21 \quad 2x=-3 \quad x=7 \\ x=-\frac{3}{2} \\ 2x(x-7) \quad 3(x-7) \\ 2(2x+3)(x-7) = 0 \end{array}$$

A: $x = -\frac{3}{2}, 7$

Ex7. $56b^2 + b - 1 = 0$

$$\begin{array}{l} 56b^2 + 8b - 7b - 1 = 0 \quad 8b-1=0 \\ 8b(7b+1) - 1(7b+1) \quad sb=1 \\ (8b-1)(7b+1) = 0 \quad b=\frac{1}{8} \\ 7b+1=0 \\ 7b=-1 \\ b=-\frac{1}{7} \end{array}$$

A: $b = \frac{1}{8}, -\frac{1}{7}$

Homework: