Algebra Review — Bard College

Solving Polynomial Equations

Example: Solve $(x-1)(x+4)=0$.

Answer: Recall that if $a \cdot b = 0$, then either $a = 0$ or $b = 0$. In this case, since $(x-3)(x-4)=0$, either $x-1=0$ or $x+4=0$. If $x-1=0$, then $x=1$. If $x-5=0$, then $x=5$. Thus, the answer is $\boxed{x=1 \text{ or } x=5}$

Example: Solve $x^2-8x+15=0$.

Answer: First, we factor the polynomial:

$$\begin{aligned} x^2-8x+15 &= 0 \\ (x-3)(x-5) &= 0 \end{aligned}$$

If $(x-3)(x-5)=0$, then either $x-3=0$ or $x-5=0$. If $x-3=0$, then $x=3$. If $x-5=0$, then $x=5$. Thus, the answer is $\boxed{x=3 \text{ or } x=5}$

Exercises: Solve the following equations. For additional practice with factoring, try the worksheet "Factoring Quadratic Expressions", and for additional practice with solving equations, try the worksheet "Solving Quadratic Equations By Factoring".

1. $(2x-4)(x+5)=0$

2. $x^2+7x+12=0$

3. $x^2+2x-15=0$

4. $x^2-5x=0$

Answers: (1) $x=2$ or $x=-5$ (2) $x=-3$ or $x=-4$ (3) $x=3$ or $x=-5$ (4) $x=0$ or $x=5$