4.5 $ax^2+bx+c=0$

$ax^2+bx=-c$

$x^2+\frac{b}{a}x=-\frac{c}{a}$

$x^2+\frac{b}{a}x+\left(\frac{b}{2a}\right)^2=\left(\frac{b}{2a}\right)^2-\frac{c}{a}$

$\left(x+\frac{b}{2a}\right)^2=\frac{b^2}{4a^2}-\frac{c}{a}\cdot\frac{4a}{4a}$

$\left(x+\frac{b}{2a}\right)^2=\frac{b^2}{4a^2}-\frac{4ac}{4a^2}$

$\left(x+\frac{b}{2a}\right)^2=\frac{b^2-4ac}{4a^2}$

$\sqrt{\left(x+\frac{b}{2a}\right)^2}=\sqrt{\frac{b^2-4ac}{4a^2}}$

$x+\frac{b}{2a}=\pm\frac{\sqrt{b^2-4ac}}{2a}$

$x+\frac{b}{2a}-\frac{b}{2a}=-\frac{b}{2a}\pm\frac{\sqrt{b^2-4ac}}{2a}$

$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

4.5 Quadratic Formula

If $ax^2+bx+c=0$

then $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

$x+5x-6=0$

$(x+6)(x-1)=0$

$-6, 1$

$\frac{-5+7}{2}=1$

$\frac{-5-7}{2}=-6$

$a=1\quad b=5\quad c=-6$

$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

$x=\frac{-5\pm\sqrt{25+24}}{2}$

$x=\frac{-5\pm\sqrt{49}}{2}$

$x=\frac{-5\pm7}{2}$

$x^2-13x+28\qquad a=1\quad b=-13\quad c=28$

$x=\frac{13\pm\sqrt{169-112}}{2}$

$\frac{13+7.55}{2}=10.28$

$x=\frac{13\pm\sqrt{57}}{2}$

$\sqrt{57}=7.55$

$\frac{13-7.55}{2}=2.73$

$x=\frac{13\pm7.55}{2}$

$\frac{5}{x}=\frac{x}{x+5}$

$x^2=5(x+5)$

$x^2-5x+25$

$-5x\quad -25$

$x^2-5x-25=0$

$a=1\quad b=-5\quad c=-25$

$\frac{16.2}{2}=8.1$

$\frac{-6.2}{2}=-3.1$

$\frac{5\pm\sqrt{25+100}}{2}$

$\frac{5\pm\sqrt{125}}{2}$

$\frac{5\pm11.2}{2}$