

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

⇓ Step 1 ⇓

$$ax^2 + bx = -c$$

⇓ Step 2 ⇓

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

⇓ Step 3 ⇓

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

⇓ Step 4 ⇓

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

⇓ Step 5 ⇓

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

⇓ Step 6 ⇓

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

⇓ Step 7 ⇓

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

[0]

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

⇓ Step 9 ⇓

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

⇓ Step 10 ⇓

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

⇓ Step 11 ⇓

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

⇓ Step 12 ⇓

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

⇓ Step 13 ⇓

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

⇓ Step 14 ⇓

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

[8]

[9]

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[11]

[12]

[13]

[14]