$$\frac{9x^2}{9} - \frac{6x}{9} - \frac{4}{9} = \frac{0}{9}$$

$$\frac{1}{2}\left(-\frac{2}{3}\right) = \left(-\frac{1}{3}\right)^2$$

$$x^2 - \frac{2}{3}x + \frac{1}{9} = \frac{4}{9} + \frac{1}{9}$$

$$\sqrt{\left(x - \frac{1}{3}\right)^2} = \pm\frac{\sqrt{5}}{\sqrt{9}}$$

$$x - \frac{1}{3} = \frac{\pm\sqrt{5}}{3}$$

$$x = \frac{1}{3} \pm \frac{\sqrt{5}}{3}$$

$$ax^2 - 3x + 1 = 0 \quad \text{solve for } x$$

$$\frac{ax^2}{a} - \frac{3x}{a} + \frac{1}{a} = \frac{0}{a} \rightarrow x^2 - \frac{3}{a}x = -\frac{1}{a} \qquad \left(\frac{1}{2}\right)\left(-\frac{3}{a}\right) = \left(\frac{-3}{2a}\right)^2 = \frac{9}{4a^2}$$

$$\rightarrow x^2 - \frac{3}{a}x + \frac{9}{4a^2} = -\frac{1}{a} + \frac{9}{4a^2} \rightarrow -\frac{1}{a}\left(\frac{4a}{4a}\right) = -\frac{4a}{4a^2} + \frac{9}{4a^2} = \frac{5a}{4a^2}$$

$$\sqrt{\left(x - \frac{3}{2a}\right)^2} = \pm\sqrt{\frac{-4a+9}{4a^2}} \qquad \frac{-4a+9}{4a^2}$$

$$x - \frac{3}{2a} = \pm\frac{\sqrt{9-4a}}{2a} \rightarrow x = \frac{3}{2a} \pm \frac{\sqrt{9-4a}}{2a}$$

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Solve for x

$$\frac{ax^2}{a} + \frac{bx}{a} + \frac{c}{a} = \frac{0}{a}$$

$$x^2 + \frac{b}{a}x + \frac{c}{a} = 0$$

$\frac{1}{2}\left(\frac{b}{a}\right) = \frac{b}{2a}$ $\quad \left(\frac{b}{2a}\right)^2$

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

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

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

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

Quadratic Formula

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

$9x^2 - 6x - 4 = 0$

Solve using the Quadratic Formula

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ → $a = 9$, $b = -6$, $c = -4$

$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(9)(-4)}}{2(9)} = \frac{6 \pm \sqrt{36 + 144}}{18}$

180
$18 \cdot 10$
$3 \cdot 3 \cdot 2 \cdot 2 \cdot 5$

$= \frac{6 \pm \sqrt{180}}{18}$ (2^2, 3^2, 5)

$= \frac{6 \pm 6\sqrt{5}}{18}$

$= \frac{6(1 \pm 1\sqrt{5})}{6 \cdot 3}$

$= \frac{1 \pm \sqrt{5}}{3}$

$ax^2 + bx + c = 0$

$2x(x-2) = x+12$

$2x^2 - 4x - x - 12 = 0$

$2x^2 - 5x - 12 = 0$

Solve by using the Quad. Form

$a = 2$

$b = -5$

$c = -12$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(2)(-12)}}{2(2)} = \frac{5 \pm \sqrt{25+96}}{4}$$

$$= \frac{5 \pm \sqrt{121}}{4} = \frac{5 \pm 11}{4}$$

$$x = \frac{5+11}{4} = \frac{16}{4} = 4$$

$$x = \frac{5-11}{4} = \frac{-6}{4} = -\frac{3}{2}$$

$\frac{3x(x+2)}{1}\cdot\frac{1}{x} + \frac{3(x)(x+2)}{1}\cdot\frac{1}{x+2} = \frac{1}{3}\cdot\frac{3(x)(x+2)}{1}$ Solve using the Quadratic Formula

$3(x+2) + 3x = x(x+2)$

$3x + 6 + 3x = x^2 + 2x$

$0 = x^2 - 4x - 6$

$a = 1$

$b = -4$

$c = -6$

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-6)}}{2(1)}$$

$$x = \frac{4 \pm \sqrt{16 + 24}}{2} = \frac{4 \pm \sqrt{40}}{2} = \frac{4 \pm 2\sqrt{10}}{2}$$

$$x = \frac{2(2 \pm \sqrt{10})}{2} = 2 \pm \sqrt{10}$$