① $x^2 + 7x - 18 = 0$

$a = 1 \quad b = 7 \quad c = -18$

$\dfrac{37.5}{50}$

$b^2 - 4ac = 7^2 - 4(1)(-18)$

$\qquad = 49 + 72$

$\qquad = 121$

$\sqrt{121} = 11$

Make sure the radicals are big enough to cover what goes inside.

$X = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$\qquad = \dfrac{-7 \pm 11}{2(1)}$

$\qquad = \dfrac{-7 \pm 11}{2}$

$\qquad = -\dfrac{18}{2}, \dfrac{4}{2} = \{-9, 2\}$

Use the brackets with "∈"
ie: "$x \in \{$stuff$\}$"

② $5.89x^2 - 13.09x + 7.26 = 0$

$100(5.89x^2 - 13.09x + 7.26) = 0$

$589x^2 - 1309x + 726 = 0$

$A = 589 \quad B = 1309 \quad C = 726$

$b^2 - 4ac = 1309^2 - 4(589)(726)$

$= 1713481 - 1710456$

$= 3025$

$\sqrt{3025} = 55$

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

$= \dfrac{-(1309) \pm 55}{2(589)}$

$= \dfrac{+1309 \pm 55}{1178}$

$= \dfrac{+1309 + 55}{1178} \quad , \quad \dfrac{+1309 - 55}{1178}$

$= \dfrac{-1254}{1178} \quad , \quad \dfrac{-1364}{1178}$

$x = +1.1579 \quad , \quad +1.0645$

-1

③ $25x^2 - 20x + 7 = 0$

$a = 25 \quad b = -20 \quad c = 7$

$b^2 = 4ac = (-20^2) - 4(25)(7)$

$= 400 - 700$

$= -300$

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

$\sqrt{-300} = 17\sqrt{11}$

$\hookrightarrow = \sqrt{100}\sqrt{3} = 10i\sqrt{3}$

$x = \dfrac{-(-20) \pm 17i\sqrt{11}}{2(25)}$

$= \dfrac{20 \pm 17i\sqrt{11}}{50}$

$x = \dfrac{2 \pm 17i\sqrt{11}}{5}$ ← Can't reduce these without reducing the "17 (10)" -2

④ $3mx^2 - 2wx + 5R = 0$

$A = 3m \quad B = -2w \quad C = 5R$

$b^2 - 4ac = (-2w)^2 - 4(3m)(5R)$

Leave this 4 out to make the factoring easy to see.

$= 4w^2 - 60mR \longrightarrow 4w^2 - 4(15mr)$

$= 4(w^2 - 15mr)$

$x = \dfrac{2w \pm \sqrt{4w^2 - 60mR}}{6m}$

$\Rightarrow \dfrac{2w \pm 2\sqrt{w^2 - 15mr}}{3\,6m}$

$x = \dfrac{w \pm \sqrt{4w^2 - 60mR}}{3m}$

$x = \dfrac{w \pm \sqrt{w^2 - 15mr}}{3m}$

If you reduce these ... You have to reduce this too!

-2

⑤ $x^2 - 7x - 18 = 0$

$(x + 9)(x - 2)$

$x \in \{-9, 2\}$ ✓

"∈" uses the "{}" brackets

"=" doesn't.   −1

⑥ $589x^2 - 1309x + 726 = 0$

$-627 - 682$

$-1309 = -700 - 609 = 42630$

$= -650 - 659 = 39540$

$= -680 - 629 = 427260$

$= -679 - 630 = 427770$

$= -678 - 631 = 427818$

$= -677 - 632 = 427864$

$= -682 - 627 = 427614$

$589x^2 - 682x - 627x + 726 = 0$

$19x(31x - 33) - 22(31x - 33) = 0$

$(19x - 22)(31x - 33) = 0$ one more step!   −1

$\Rightarrow x \in \left\{\dfrac{33}{31}, \dfrac{22}{19}\right\}$

⑦ $x^2 + 7x - 18 = 0$

$x^2 + 7x = 18$

$x^2 + 7x + 49/4 = 18 + 49/4$

$\left(x + \dfrac{7}{2}\right)^2 = \dfrac{121}{4}$

$x = \{-9, 2\}$ ← missing steps...

$x + \dfrac{7}{2} = \pm\sqrt{\dfrac{121}{4}}$

$= \pm \dfrac{11}{2}$ −1

$x = \dfrac{-7 \pm 11}{2}$ ↗2 ↘−9

−3

⑧ $x^2 - 24x - 9$

$x^2 - 24x - 9 = 0$ ← This square complete itself?

$\boxed{x = 12 \pm 3\sqrt{17}}$ } You can stop here.

$x \in \{12 + 3\sqrt{17},\ 12 - 3\sqrt{17}\}$

−3

⑨ $5x^2 + 2x + 3 = 0$

$5x^2 + 2x = -3$

$x^2 + \frac{2}{5}x = -\frac{3}{5}$

$x^2 + \frac{2}{5}x + \frac{1}{25} = -\frac{3}{5} + \frac{1}{25}$

$(x + \frac{1}{5})^2 = -\frac{14}{25}$ ⟶ $x + \frac{1}{5} = \pm\sqrt{\frac{-14}{25}}$

~~NO solution~~

$= \pm \frac{i\sqrt{14}}{5}$

−2

$\boxed{x = \frac{-1 \pm i\sqrt{14}}{5}}$

⑩ $4x^2 - 16x + 11 = 0$

$4x^2 - 16x = -11$

$x^2 - 4x = -\frac{11}{4}$

$x^2 - 4x + 4 = -\frac{11}{4} + 4$

$(x - 2)^2 = \frac{5}{4}$

$x \in \{ -\frac{\sqrt{5}}{2} + 2,\ \frac{\sqrt{5}}{2} + 2 \}$

$-\frac{1}{2}$

Style Note Leave the "±" together in one statement

ie: $x \in \{ 2 \pm \frac{\sqrt{5}}{2} \}$

−5.5

Please note, in the future, photographs/scans that are dark/gray will not be graded as they can be very difficult to read.
Clean scans, please!

Thank You!