Please note, in the future, photographs will not be graded. Clean scans, please.

MAT 1340
Lear

42/50

1.) $x^2 + 7x - 18 = 0$

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

$$x = \frac{-7 \pm \sqrt{7^2 - 4(1)(-18)}}{2(1)}$$

Do this seperately then...

$$x = \frac{-7 \pm \sqrt{49 + 72}}{2}$$

$$x = \frac{-7 \pm \sqrt{121}}{2}$$

→ plug it in here

$$x = \frac{-7 \pm 11}{2}$$

$$x = \frac{-7 + 11}{2} \qquad x = \frac{4}{2} \qquad x_1 = 2$$

$$x = \frac{-7 + -11}{2} \qquad x = \frac{-18}{2} \qquad x_2 = -9$$

Important

Solution set

$x = \{2, -9\}$

-1

-1

-2

MAT 1340

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

$a = 5.89$
$b = -13.09$
$c = 7.26$

$$x = \frac{-(-13.09) \pm \sqrt{(-13.09)^2 - 4(5.89)(7.26)}}{2(5.89)}$$

$$x = \frac{13.09 \pm \sqrt{171.3481 - 171.0456}}{11.78}$$

① Find discriminant!
② Plug it in

$$x = \frac{13.09 \pm \sqrt{0.3025}}{11.78}$$

$$x = \frac{13.09 \pm 0.55}{11.78}$$

$$x = \frac{13.09 + 0.55}{11.78} \qquad x = \frac{13.64}{11.78}$$

$x_1 \approx 1.1579$

$$x = \frac{13.09 - 0.55}{11.78} \qquad x = \frac{12.54}{11.78}$$

$x_2 \approx 1.0646$

$\approx$ means exact. Rounded decimals needs $\approx$

-1

Solution Set: $\{1.1579, 1.0646\}$

-2

MAT1340

3.) $25x^2 - 20x + 7 = 0$

$a = 25$

$b = -20$

$c = 7$

$$x = \frac{-(-20) \pm \sqrt{(-20)^2 - 4(25)(7)}}{2(25)}$$

$$x = \frac{20 \pm \sqrt{400 - 700}}{50} \rightarrow x = \frac{20 \pm \sqrt{-300}}{50}$$

the "i" goes outside of the radical!

$$x = \frac{20 \pm 10\sqrt{3}i}{50} \rightarrow x_1 = \frac{20 + 10\sqrt{3}i}{50}$$

$$x_1 = \frac{2}{5} + \frac{\sqrt{3}i}{5}$$

$$x_2 = \frac{20 - 10\sqrt{3}i}{50}$$

$$x_2 = \frac{2}{5} - \frac{\sqrt{3}i}{5}$$

Solution Set

$$\left(\frac{2}{5} + \frac{\sqrt{3}i}{5}, \frac{2}{5} - \frac{\sqrt{3}i}{5}\right)$$

*stylet tip

use the LCD to make one fraction, "±" on the right.

ie: $x = \frac{2 \pm i\sqrt{3}}{5}$

MAT 1340 4.) $3mx - 2wx + 5r = 0$

$a = 3m$
$b = -2w$
$c = 5r$

$$x = \frac{-(-2w) \pm \sqrt{(-2w)^2 - 4(3m)(5r)}}{2(3m)}$$

$$\downarrow$$

$$x = \frac{2w \pm \sqrt{4w - 60mr}}{6m}$$

$$\downarrow$$

$$x = \frac{2w \pm 2\sqrt{w^2 - 15mr}}{6m} = \frac{w \pm \sqrt{w^2 - 15mr}}{3m}$$

Just reduce and there's your sol'n!

Solution set

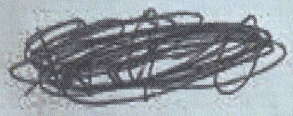
$$\left(\frac{2w + 2\sqrt{w^2 - 15mr}}{6m}, \frac{2w - 2\sqrt{w^2 - 15mr}}{6m} \right)$$

-1

MAT 1340

5) $x^2 + 7x - 18 = 0$

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



$x+9=0$ $\quad$ $x-2=0$

$x_1 = -9$ $\quad$ $x_2 = 2$

Solution set

$x = \{-9, 2\}$

MAT 1340

6.) $589x^2 - 1309x + 726 = 0$

$\downarrow$

$589x^2 - 627x - 682x + 726 = 0$ ← How/why these numbers?

$\downarrow$

$19x(31x - 33) - 22(31x - 33) = 0$ -2

$\downarrow$

$(31x - 33)(19x - 22) = 0$ ← good

$\downarrow$

$31x - 33 = 0$ $\qquad$ $19x - 22 = 0$

$31x = 33$ $\qquad$ $19x = 22$

$x = \frac{33}{31}$ $\qquad$ $x_2 = \frac{22}{19}$

Solution set

$x = \left\{ \frac{33}{31}, \frac{22}{19} \right\}$

-2

MAT 1340

7.) $x^2 + 7x - 18 = 0$

$x^2 + 7x = 18$

$x^2 + 7x + \frac{49}{4} = 18 + \frac{49}{4}$

$(x + \frac{7}{2})^2 = 18 + \frac{49}{4}$

$(x + \frac{7}{2})^2 = \frac{121}{4} \rightarrow x + \frac{7}{2} = \pm \frac{11}{2}$

$x + \frac{7}{2} = -\frac{11}{2}$ $\qquad$ $x + \frac{7}{2} = \frac{11}{2}$

$x = \frac{-11}{2} - \frac{7}{2}$ $\qquad$ $x = \frac{11}{2} - \frac{7}{2}$

$x_1 = -9$ $\qquad$ $x_2 = 2$

Solution Set: $x = \{-9, 2\}$

MAT 1340

8) $x^2 - 24x - 9 = 0$

$x^2 - 24x = 9$

$x^2 - 24x + 144 = 9 + 144$

$(x-12)^2 = 153$

$x - 12 = \pm 3\sqrt{17}$

Solution Set

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

style note keep "$\pm$" on the right ie: $x = 12 \pm 3\sqrt{17}$

MAT 1340

a) $5x^2 + 2x + 3 = 0$

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

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

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

$$\left(x + \frac{1}{5}\right)^2 = -\frac{14}{25}$$

$$x + \frac{1}{5} = \pm\frac{\sqrt{14}}{5}$$

Solution set

$$\left(-\frac{1}{5} - \frac{\sqrt{14}}{5}i, -\frac{1}{5} + \frac{\sqrt{14}}{5}i\right)$$

-10

MAT 1340

10.) $4x^2 - 16x + 11 = 0$

$\frac{4x^2 - 16x}{4} = \frac{-11}{4}$

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

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

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

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

Solution Set

$\left(-\frac{\sqrt{5}}{2} + 2, \frac{\sqrt{5}}{2} + 2\right)$

10