Review: Solving Quadratics
Method 1: (Factoring) Trinomial Recoup.
(1) b)

$$
\begin{array}{lr}
\text { b) } 3 x^{2}+7 x+\frac{2}{2}=0 & 1 \times 6=6 \\
\left(3 x^{2}+1 x\right)(+6 x+2)=0 & 1+\underline{6}=7 \\
x(3 x+1)+2(3 x+1)=0 & 1 \times 6 \\
(3 x+1)(x+2)=0 & 2 x^{3} \\
3 x+1=0 & x+2=0 \\
3 x=-1 & x=-2 \\
x=-\frac{1}{3} &
\end{array}
$$

Method $2^{\text {: }}$. Completing the Square:
(1) b)

$$
\begin{aligned}
& 3 x^{2}+7 x+2=0 \\
& \frac{3 x^{2}}{3}+\frac{7 x}{3}=-\frac{2}{3} \\
& x^{2}+\frac{7 x}{3}=-\frac{2}{3} \\
& \begin{array}{l}
x^{2}+\frac{7}{3} x+\frac{49}{36}=-\frac{2}{3}+\frac{49}{36} \begin{array}{c}
\frac{7}{3} \times \frac{1}{2}=\left(\frac{7}{6}\right)^{2} \\
=\frac{49}{36}
\end{array} \\
(x+7)^{2}=-\frac{24}{36}+\frac{49}{36}
\end{array} \\
& \left(x+\frac{7}{6}\right)^{2}=\frac{25}{36} \quad \begin{array}{c}
\text { Square Root } \\
\text { both sides }
\end{array} \\
& \text { both sides } \\
& x+\frac{7}{6}= \pm \sqrt{\frac{25}{36}} \\
& x+\left(\frac{7}{6}\right)= \pm \frac{5}{6} \\
& x=\frac{-7}{6} \pm \frac{5}{6} \\
& x=-\frac{7}{6}-\frac{5}{6} \\
& x=-\frac{7}{6}+\frac{5}{6} \\
& x=\frac{-12}{6} \\
& x=-2 \\
& x=\frac{-2}{6} \\
& x=-\frac{1}{3}
\end{aligned}
$$

Common Factor

$$
\begin{array}{ll}
\text { (1) } x^{2}+4 x=0 & \text { (2) } 3 x^{2}-9 x=0 \\
(x)(x+4)=0 & 3 x(x-3)=0 \\
x=0 & \begin{array}{rl|l}
x+4=0 & 3 x=0 & x-3=0 \\
x=-4 & x=0 & x=3
\end{array}
\end{array}
$$

- Difference of Squares. $a^{2}-b^{2}$

$$
(a+b)(a-b)
$$

(1)

$$
\begin{aligned}
& x^{3}-[9]=0 \\
& (x+3)(x-3)=0 \\
& \begin{array}{c|c}
x+3=0 & x-3=0 \\
x=-3 & x=3
\end{array}
\end{aligned}
$$

$$
\left.\begin{aligned}
& 4 x^{2}-16=0 \text { C.F. } \\
& 4\left(x^{2}\right)(-4)=0 \text { D.0.S. } \\
& 4(x+2)(x-2)=0 \\
& x+2=0 \\
& x=-2
\end{aligned} \right\rvert\, x-2=0.8 .
$$

Completing the Square:
(2) d)

$$
\begin{aligned}
& 9 x^{2}-12 x-32=0 \\
& \begin{array}{l}
9 x-12 x-32=0 \\
\frac{9 x^{2}-\frac{12 x}{9}}{9}=\frac{32}{9}
\end{array} \\
& x^{2}-\frac{4}{3} x+\frac{16}{36}=\frac{32}{9}+\frac{16}{36} \quad-\frac{4}{3} \times \frac{1}{2}=\left(\frac{-4}{6}\right)^{2}=\frac{16}{36} \\
& \left(x-\frac{4}{6}\right)^{2}=\frac{32}{9}+\frac{4}{9} \\
& \left(x-\frac{2}{3}\right)^{2}=\frac{36}{9} \\
& (x-2 / 3)^{2}=4 \text { * Square Root both } \\
& x-2 / 3= \pm 2 \\
& x=\frac{2}{3} \pm 2 \\
& x=\frac{2}{3}-\frac{2}{1} \\
& x=\frac{\partial}{3}+\frac{\partial}{1} \\
& x=\frac{2}{3}-\frac{6}{3} \\
& x=\frac{2}{3}+\frac{6}{3} \\
& x=\frac{-4}{3} \\
& x=\frac{8}{3}
\end{aligned}
$$

Completing the Square.

$$
\begin{aligned}
& \text { (2) h) }-9=-4 x^{2}-2 x \\
& \begin{array}{l}
\left.4 x^{2}+2 x-9\right)=0 \\
4 x^{2}+\frac{2 x}{4}=\frac{9}{4} \\
x^{2}+\frac{1}{2} x+\frac{1}{16}=\frac{9}{4}+\frac{1}{16} * \frac{1}{2} \times \frac{1}{2}=\left(\frac{1}{4}\right)^{2}=\frac{1}{16} \\
\left(x+\frac{1}{4}\right)^{2}=\frac{36}{16}+\frac{1}{16} \\
\left(x+\frac{1}{4}\right)^{2}=\frac{37}{16} \quad \begin{array}{l}
\text { Square Root Both } \\
\text { sides }
\end{array} \\
x+1 / 4= \pm \sqrt{\frac{37}{16}} \\
x=-\frac{1}{4} \pm \frac{\sqrt{37}}{4} \\
x=\frac{-1}{4}-\frac{\sqrt{37}}{4} \quad x=\frac{-1}{4}+\frac{\sqrt{37}}{4} \\
x=\frac{-1-\sqrt{37}}{4} \quad x=\frac{-1+\sqrt{37}}{4} \\
x=\frac{-7.08}{4} \quad x=\frac{5.08}{4} \\
x=-1.77 \quad
\end{array} \quad \begin{array}{l}
x=1.27
\end{array}
\end{aligned}
$$

Factoring

$$
\begin{array}{ll}
\text { (1) } f{ }^{3} m^{2}-10 m+3=0 & -1 x^{-9}=9 \\
\left(3 m^{2}-1 m\right)(-9 m+3)=0 & -1+9=-10 \\
m(3 m-1)-3(3 m-1)=0 \\
(3 m-1)(m-3)=0 \\
3 m-1=0 & m-3=0 \\
3 m=1 & m=3 \\
m=1 / 3
\end{array}
$$

$$
\begin{array}{r}
9 \\
-1 \times 9 \\
3 \times 3
\end{array}
$$

Revias \#3
(2) j)

$$
\begin{gathered}
x^{2}-\Delta=0 \\
(x+2)(x-2)=0 \\
x+2=0 \\
x=-2 \mid x-2=0 \\
x=2
\end{gathered}
$$

$$
\begin{aligned}
& \text { k) } 4 x^{2}-25=0 \\
& (2 x+5)(2 x-5)=0 \\
& \begin{array}{r|r}
2 x+5=0 & \partial x-5=0 \\
\partial x=-5 & \\
x=-\frac{5}{2} & \quad \partial x=5 \\
x & =5
\end{array} \\
& \begin{array}{r|r}
2 x+5 & =0 \\
\partial x & =-5 \\
x & =-\frac{5}{2} \\
& 2 x-5=0 \\
& x=5 \\
& =5
\end{array} \\
& \left.\begin{aligned}
2 x+5 & =0 \\
\partial x & =-5 \\
x & =-\frac{5}{2}
\end{aligned} \right\rvert\, \begin{aligned}
\partial x-5 & =0 \\
& =5 \\
& =5
\end{aligned}
\end{aligned}
$$

Ex.

$$
\left.\begin{aligned}
& (x+2)^{2}-\sqrt{16}=0 \\
& (x+2+4)(x+2-4)=0 \\
& (x+6)(x-2)=0 \\
& x+6=0 \\
& x=-6
\end{aligned} \right\rvert\, \begin{aligned}
& x-2=0 \\
& x=2
\end{aligned}
$$

$$
\begin{aligned}
& \text { (4) b) } \begin{array}{l}
\partial x^{2}-3 x+2=0 \\
a=2 \quad b=-3 \quad c=2 \\
x=-\frac{b \pm \sqrt{b^{2}-4 a c}}{\partial a} \\
x=\frac{-(-3) \pm \sqrt{(-3)^{2}-4(2)(0)}}{2(a)} \\
x=\frac{3 \pm \sqrt{9-16}}{4} \\
x=\frac{3 \pm \sqrt{-7}}{4} \\
x=\frac{3 \pm \sqrt{7 i^{2}}}{4} \\
x=\frac{3 \pm i \sqrt{7}}{4}
\end{array} \quad \text { Imaginary Roots }
\end{aligned}
$$

