

$$\begin{aligned}
 \text{f. } 25x^2 + 30x &= 12 \\
 25x^2 + 30x + 9 &= 12 + 9 \\
 (5x + 3)^2 &= 21 \\
 \sqrt{(5x+3)^2} &= \pm\sqrt{21} \\
 \begin{array}{r} 5x+3 = \pm\sqrt{21} \\ -3 \quad -3 \\ \hline 5x = -3 \pm \sqrt{21} \\ \frac{5x}{5} = \frac{-3 \pm \sqrt{21}}{5} \\ x = \frac{-3 \pm \sqrt{21}}{5} \end{array}
 \end{aligned}$$

$$\begin{aligned}
 \text{g. } 4x^2 + 10x - 3 &= 0 \\
 \begin{array}{r} +3 \quad +3 \\ \hline 4x^2 + 10x + \frac{25}{4} = \frac{3}{4} + \frac{25}{4} = \frac{12}{4} + \frac{25}{4} \\ \frac{5x}{2x} = \frac{5}{2} \\ (2x + \frac{5}{2})^2 = \frac{37}{4} \\ \sqrt{(2x + \frac{5}{2})^2} = \pm\sqrt{\frac{37}{4}} = \pm\frac{\sqrt{37}}{2} \\ 2x + \frac{5}{2} = \pm\frac{\sqrt{37}}{2} \\ \begin{array}{r} -\frac{5}{2} \quad -\frac{5}{2} \\ \hline \frac{1}{2} \cdot 2x = (-\frac{5}{2} \pm \frac{\sqrt{37}}{2}) \cdot \frac{1}{2} \\ x = -\frac{5}{4} \pm \frac{\sqrt{37}}{4} \quad \text{OR} \quad -\frac{5 \pm \sqrt{37}}{4} \end{array} \end{array}
 \end{aligned}$$

$$\begin{aligned}
 \text{h. } 2x^2 - x + 3 &= x + 9 \\
 \begin{array}{r} -x \quad -3 \quad -x \quad -3 \\ \hline 2x^2 - 2x \quad \quad = \frac{6}{2} \quad \quad \\ \frac{2x^2}{2} \quad \frac{-2x}{2} \quad \quad = \frac{6}{2} \quad \quad \\ x^2 - 1x \quad \quad = 3 \quad \quad \end{array}
 \end{aligned}$$

$$x = \frac{1}{2} \pm \frac{\sqrt{13}}{2} \quad \text{OR} \quad \frac{1 \pm \sqrt{13}}{2}$$

Problem 5:

What is $y = x^2 - 10x + 4$ in vertex form?
Name the vertex and y-intercept.

$$y = (x^2 - 10x \quad \underline{\quad}) + 4 \quad \underline{\quad}$$

b. $y = 2x^2 - 8x + 1$

$$y = (2x^2 - 8x + \underline{8}) + 1 \quad \underline{-8}$$

$$y = 2(x^2 - 4x + \underline{4}) + 1 \quad \underline{-8}$$

$$y = 2(x - 2)^2 - 7$$

$$v: (2, -7)$$

$$y = 2(0 - 2)^2 - 7$$

$$y = 2(4) - 7$$

$$8 - 7$$

$$y = 1$$

$$(0, 1)$$

$$3x^2 - 8x + 5 = 0$$

$$b^2 - 4ac$$

Discriminant
+ number + type
of solutions

$$(-8)^2 - 4(3)(5)$$

$$64 - 60 = 4 \rightarrow 2 \text{ real solutions}$$

⊖	0	⊕
2 imaginary (0 real)	1 real	2 real

Solve by QF

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

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{5 \pm \sqrt{25 - 4(2)(7)}}{4}$$

$$= \frac{5 \pm \sqrt{-31}}{4} = \boxed{\frac{5 \pm i\sqrt{31}}{4}}$$

$$\frac{10 \pm \sqrt{-32}}{4} = \frac{10 \pm 4i\sqrt{2}}{4}$$

$$= \frac{5 \pm 2i\sqrt{2}}{2} = \frac{5}{2} \pm \frac{2i\sqrt{2}}{2}$$

$$\frac{5}{2} \pm i\sqrt{2}$$

