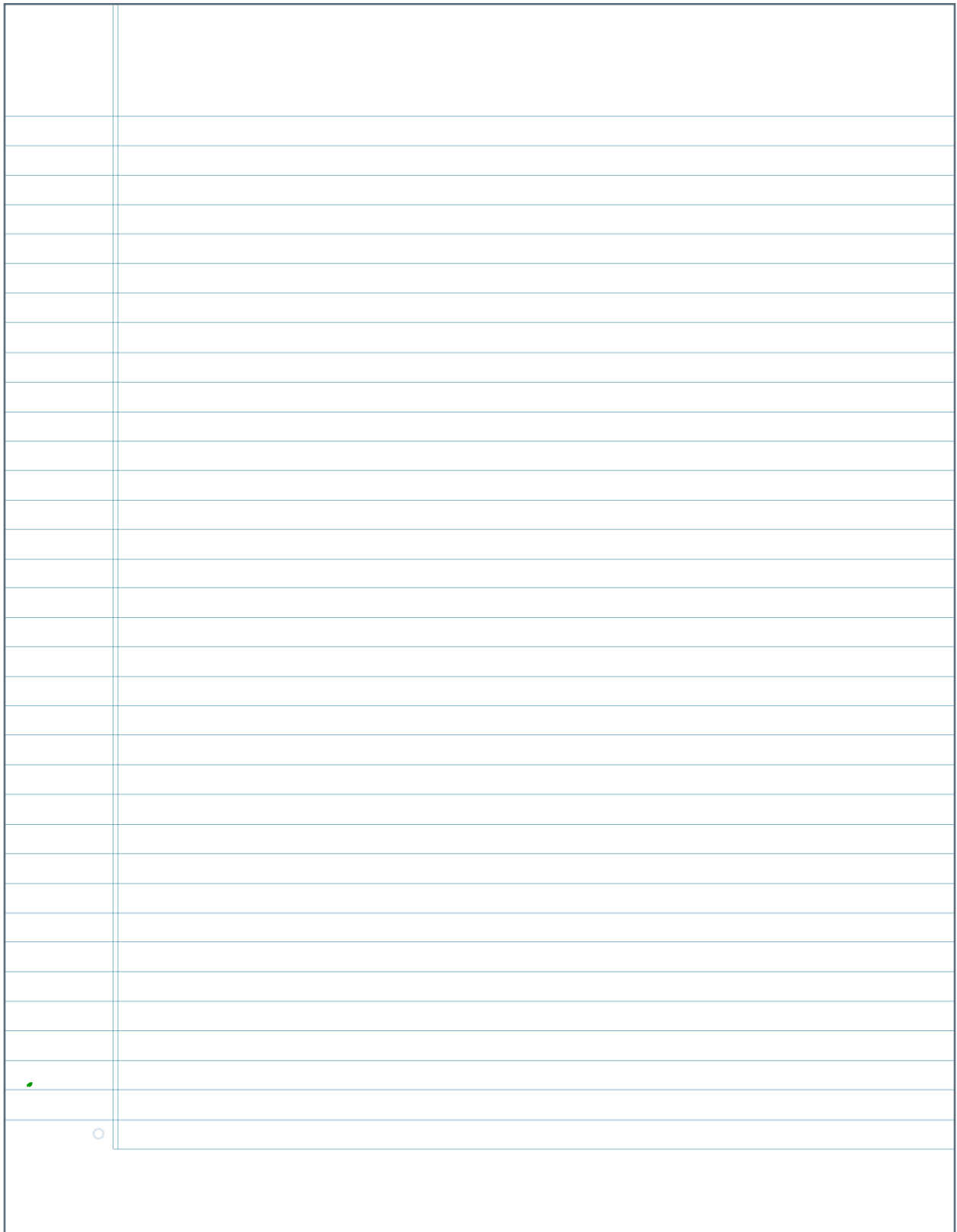


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11.15.2016 10:59a TR Int. Alg. Sections 8.1-8.5 and 9.1-9.4 (Start) 13m 5s

8.1 Solving Quadratic Equations by Completing the Square (123-127)

8.1.1 Apply the Square root property

$$\begin{aligned} \text{a)} \quad & (4x+9)^2 = 5 \\ & \rightarrow 4x+9 = \pm\sqrt{5} \end{aligned}$$

$$\begin{aligned} \text{c)} \quad & (9z-2)^2 = -4 \\ & \rightarrow 9z-2 = \pm\sqrt{-4} \end{aligned}$$

$$\begin{aligned} \text{b)} \quad & (3y)^2 = 0 \\ & \rightarrow 3y = \pm\sqrt{0} \end{aligned}$$

$$\begin{aligned} \text{(25)} \quad & (x+8)^2 + 75 = 0 \\ & \quad \quad \quad -75 \quad -75 \\ & (x+8)^2 = -75 \\ & x+8 = \pm\sqrt{-75} \\ & x+8 = \pm i\sqrt{75} \\ & \quad \quad \quad = \pm i\sqrt{3 \cdot 5 \cdot 5} \\ & x+8 = \pm 5i\sqrt{3} \\ & \quad \quad \quad -8 \quad -8 \\ & x = \cancel{-8 \pm 5i\sqrt{3}} \\ & \quad \quad \quad -8 \pm 5i\sqrt{3} \end{aligned}$$

[Ex]

$$y^2 + 10y + 25 \quad x^2 - 8x + 16 \quad x^2 - 2x + 1$$

$$\text{(8.1.31)} \quad x^2 + 11x + \frac{121}{4}$$

$$\text{Fraction: } \left(\frac{11}{2}\right)^2 = \frac{11}{2} \cdot \frac{11}{2} = \frac{121}{4}$$

$$\text{Decimal: } \frac{11}{2} = 5.5 \Rightarrow (5.5)^2 = 30.25$$

$$\begin{aligned} \text{[Ex]} \quad & x^2 + 11x + \frac{121}{4} \\ & (x + \frac{11}{2})(x + \frac{11}{2}) \\ & (x + \frac{11}{2})^2 \end{aligned}$$

$$\begin{aligned} & x^2 + 11x + 30.25 \\ & (x + 5.5)(x + 5.5) \\ & (x + 5.5)^2 \end{aligned}$$

Solve Quadratic Equations by Completing the Square

(65) Solve

$$9x^2 - 24x + 11 = 0$$

(1)

$$\frac{9x^2}{9} - \frac{24x}{9} + \frac{11}{9} = \frac{0}{9}$$

Side work

$$x^2 - \frac{8}{3}x + \frac{11}{9} = 0$$

(1) cut in half

$$x^2 - \frac{8}{3}x + \frac{16}{9} = -\frac{11}{9} + \frac{16}{9}$$

$-\frac{8}{3}$

$$\frac{-\frac{8}{3}}{2} = \frac{-\frac{8}{3}}{2} = \frac{1}{2}$$

$$(x - \frac{4}{3})(x - \frac{4}{3}) = \frac{-11+16}{9}$$

(2) Square it = $\frac{16}{9}$

$$(x - \frac{4}{3})^2 = \frac{5}{9}$$

$$x - \frac{4}{3} = \pm \frac{\sqrt{5}}{\sqrt{9}}$$

$$x - \frac{4}{3} = \pm \frac{\sqrt{5}}{3}$$

$$x = \frac{4}{3} \pm \frac{\sqrt{5}}{3}$$

$$x = \frac{4 \pm \sqrt{5}}{3}$$

(79) $s(t) = 16t^2$

distance = $16t^2$ ↑ time in seconds

$$\frac{866}{16} = \frac{16t^2}{16}$$

$$54.125 = t^2$$



$$t^2 = 54.125$$

$$t = \pm \sqrt{54.125}$$

$$t \approx 7.36 \text{ sec}$$

$$t \approx -7.36 \text{ sec}$$

~~extraneous~~

8.2 Solving Quadratic Equations by Using the Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} ; ax^2 + bx + c = 0$$

⑨ Use quad formula to solve

$$\left(1\right) \left(\frac{2}{7}m^2 + \frac{1}{7}m\right) = \left(\frac{10}{7}\right)(1)$$

$$\begin{array}{rcl} 2m^2 + m & = & 10 \\ -10 & -10 & \end{array}$$

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

$$m = \frac{-1 \pm \sqrt{1^2 - (1)(2)(-10)}}{2(2)}$$

$$2m^2 + 1m - 10 = 0$$

$ax^2 + bx + c$

$$a = 2 \quad b = 1 \quad c = -10$$

$$m = \frac{-1 \pm \sqrt{1 + 80}}{4}$$

$$m = \frac{-1 \pm \sqrt{81}}{4} = \frac{-1 \pm 9}{4}$$

$$m = \frac{-1 + 9}{4} = \frac{8}{4}$$

$$m = 2$$

$$m = \frac{-1 - 9}{4} = \frac{-10}{4}$$

$$m = -5/2$$

