

(1.1 p. 728

ex 6  $x^2 - 2x - 99 = 0$

$121 - 22 - 99$

$81 + 18 - 99$

$(x - 11)(x + 9) = 0$

$x - 11 = 0$        $x + 9 = 0$

$x = 11$        $x = -9$

$\{11, -9\}$

Apr 6-6:28 PM

ex 10  $5x^2 - 14x = 3$

$5x^2 - 14x - 3 = 0$  "AC Method"

Mult.  $5(-3) = -15$

Add  $-14 = -15 + 1$

R

$5x^2 - 15x + 1x - 3 = 0$

F  $5x(x - 3) + 1(x - 3) = 0$

F  $(x - 3)(5x + 1) = 0$

$x - 3 = 0$        $5x + 1 = 0$

$x = 3$        $5x = -1$

$x = -\frac{1}{5}$

Apr 6-6:36 PM

$$\text{ex 20} \quad \sqrt{m^2} = \sqrt{\frac{36}{121}}$$

$$m = \pm \frac{6}{11}$$

or

$$\left\{ \frac{6}{11}, -\frac{6}{11} \right\}$$

$$\text{ex 26} \quad 2x^2 = 9$$

$$\sqrt{x^2} = \sqrt{\frac{9}{2}}$$

$$x = \pm \frac{3}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$x = \pm \frac{3\sqrt{2}}{2}$$

Apr 6-6:46 PM

$$\text{ex 30} \quad 7p^2 - 5 = 11$$

$$\quad \quad \quad +5 \quad +5$$

$$7p^2 = 16$$

$$\sqrt{p^2} = \sqrt{\frac{16}{7}}$$

$$p = \pm \frac{4}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \pm \frac{4\sqrt{7}}{7}$$

Apr 6-6:51 PM

ex 34

$$-12x^2 = -144$$

$$\sqrt{x^2} = \sqrt{12}$$

$$x = \pm\sqrt{12}$$

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

$$x = \pm 2\sqrt{3}$$

Apr 6-6:53 PM

ex 36

$$\sqrt{(x-7)^2} = \sqrt{16}$$

$$x-7 = \pm 4$$

$$x-7 = 4 \quad \text{or} \quad x-7 = -4$$

$$x = 11$$

$$x = 3$$

$$x = 7 \pm 4$$

$$x = 11 \text{ or } 3$$

$$\{3, 11\}$$

Apr 6-6:56 PM

ex 40

$$\sqrt{(p-5)^2} = \sqrt{40}$$

$$p-5 = \pm \sqrt{4} \sqrt{10}$$

$$p-5 = \pm 2\sqrt{10}$$

$$p = 5 \pm 2\sqrt{10}$$

$$\left\{ 5-2\sqrt{10}, 5+2\sqrt{10} \right\}$$

check  $5-2\sqrt{10}$

$$(5-2\sqrt{10}-5)^2 \stackrel{?}{=} 40$$

$$(-2\sqrt{10})^2 \stackrel{?}{=} 40$$

$$(-2\sqrt{10})(-2\sqrt{10}) \stackrel{?}{=} 40$$

$$4 \cdot 10 = 40 \checkmark$$

Apr 6-7:01 PM

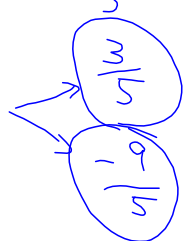
ex 42

$$\sqrt{(5t+3)^2} = \sqrt{36}$$

$$5t+3 = \pm 6$$

$$\frac{5t}{5} = \frac{-3 \pm 6}{5}$$

$$t = \frac{-3 \pm 6}{5}$$



$$\left\{ \frac{-9}{5}, \frac{3}{5} \right\}$$

Apr 6-7:08 PM

ex48

$$\sqrt{(5z+6)^2} = \sqrt{75}$$

$$5z+6 = \pm \sqrt{25} \sqrt{3}$$

$$5z+6 = \pm 5\sqrt{3}$$

$$\frac{5z}{5} = \frac{-6 \pm 5\sqrt{3}}{5}$$

$$z = \frac{-6 \pm 5\sqrt{3}}{5}$$

Apr 6-7:13 PM

ex50

$$\sqrt{\left(\frac{1}{3}m+4\right)^2} = \sqrt{27}$$

$$\frac{1}{3}m + 4 = \pm 3\sqrt{3}$$

$$\cancel{3} \cdot \frac{1}{3}m = (-4 \pm 3\sqrt{3}) \cdot \cancel{3}$$

$$m = -12 \pm 9\sqrt{3}$$

Apr 6-7:17 PM

ex 52

$$\sqrt{\left(x - \frac{1}{9}\right)^2} = \sqrt{\frac{1}{81}}$$

$$x - \frac{1}{9} = \pm \frac{1}{9}$$

$$\begin{array}{ccc} +\frac{1}{9} & +\frac{1}{9} & \\ x = \frac{1}{9} + \frac{1}{9} & \rightarrow & \frac{2}{9} \\ & & \searrow \\ & & 0 \end{array}$$

$$\left\{0, \frac{2}{9}\right\}$$

Apr 6-7:21 PM

ex 58

$$(2x - 5)^2 - 180 = 0$$

$$\begin{array}{ccc} +180 & +180 & \end{array}$$

$$\sqrt{(2x - 5)^2} = \sqrt{180}$$

$$2x - 5 = \pm \sqrt{9} \sqrt{4} \sqrt{5}$$

$$2x - 5 = \pm 6\sqrt{5}$$

$$\begin{array}{ccc} +5 & +5 & \\ 2x & = & 5 \pm 6\sqrt{5} \end{array}$$

$$x = \frac{5 \pm 6\sqrt{5}}{2} \quad \frac{5}{2} \pm \frac{6\sqrt{5}}{2}$$

Apr 6-7:23 PM

$$\underline{\text{ex 66}} \quad \sqrt{x^2} = \sqrt{-18}$$

$$x = \pm \sqrt{-1} \sqrt{9} \sqrt{2}$$

$$x = \pm i \cdot 3 \sqrt{2}$$

$$x = \pm 3i\sqrt{2}$$

Apr 6-7:29 PM

$$\underline{\text{ex 68}} \quad \sqrt{(t+6)^2} = \sqrt{-9}$$

$$t+6 = \pm 3i$$

$$\begin{array}{cc} -6 & -6 \end{array}$$

$$t = -6 \pm 3i$$

$$\sqrt{-9}$$

$$\sqrt{-1} \sqrt{9}$$

$$i \cdot 3$$

$$3i$$

Apr 6-7:31 PM

$$\text{ex 70 } \sqrt{(4m - 7)^2} = \sqrt{-27}$$

$$4m - 7 = \pm 3i\sqrt{3}$$

$$4m = 7 \pm 3i\sqrt{3}$$

$$m = \frac{7 \pm 3i\sqrt{3}}{4}$$

$$\sqrt{-1} \sqrt{9} \sqrt{3}$$

$$i \cdot 3 \cdot \sqrt{3}$$

Apr 6-7:33 PM

ex 72

$$d = 16t^2$$

d = distance (ft)

t = time (sec)

$$630 = 16t^2$$

$$\sqrt{39.375} = \sqrt{t^2}$$

$$\uparrow^{\pm} 6.237 \text{ sec} = t$$

pos. only

(we don't want neg. time)

Apr 6-7:36 PM



11.2 p. 736

ex 4 |  $x^2 + 16x + \underline{64}$

↓ ↗  
+8

ex 10

|  $x^2 + 3x + \underline{\frac{9}{4}}$

↓ ↗  
+  $\frac{3}{2}$

ex 6 |  $a^2 - 32a + \underline{256}$

↓ ↗  
-16

ex 12

|  $x^2 + \frac{1}{3}x + \underline{\frac{1}{36}}$

↓ ↗  
 $\frac{1}{6}$

Apr 6-7:39 PM

ex 24 |  $p^2 - 2p + \underline{1} = 8 + \underline{1}$

↓ ↗  
-1

$(p - 1)^2 = 9$

$\sqrt{(p - 1)^2} = \sqrt{9}$

$p - 1 = \pm 3$

+1 +1

$p = 1 \pm 3 \begin{cases} \rightarrow 4 \\ \rightarrow -2 \end{cases}$

Apr 6-7:44 PM

ex 26

$$r^2 + 4r + 1 = 0$$

$$r^2 + 4r + 4 = -1 + 4$$

$$(r + 2)^2 = 3$$

$$\sqrt{(r+2)^2} = \sqrt{3}$$

$$r+2 = \pm\sqrt{3}$$

$$-2 \quad -2$$

$$r = -2 \pm \sqrt{3}$$

Apr 6-7:48 PM

ex 30

$$x^2 + 8x + 11 = 0$$

$$x^2 + 8x + 16 = -11 + 16$$

$$(x + 4)^2 = 5$$

√ each side

$$x+4 = \pm\sqrt{5}$$

$$-4 \quad -4$$

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

Apr 6-7:50 PM

ex 34

$$x^2 + 13x + \frac{169}{4} = 3 + \frac{169}{4}$$

$$\left(x + \frac{13}{2}\right)^2 = \frac{181}{4}$$

√ each side

$$x + \frac{13}{2} = \pm \frac{\sqrt{181}}{2}$$

$$-\frac{13}{2} \quad -\frac{13}{2}$$

$$x = \frac{-13 \pm \sqrt{181}}{2}$$

$$\frac{12}{4} + \frac{169}{4}$$

Apr 6-7:53 PM

ex 36

$$\frac{9x^2}{9} + \frac{3x}{9} = \frac{2}{9}$$

$$x^2 + \frac{1}{3}x + \frac{1}{36} = \frac{2}{9} + \frac{1}{36}$$

$$\left(x + \frac{1}{6}\right)^2 = \frac{9}{36}$$

$$x + \frac{1}{6} = \pm \frac{3}{6}$$

$$-\frac{1}{6} \quad -\frac{1}{6}$$

$$x = -\frac{1}{6} \pm \frac{3}{6}$$

$$\frac{-1 \pm 3}{6} \rightarrow \frac{2}{6} = \left(\frac{1}{3}\right)$$

$$\frac{-4}{6} = \left(-\frac{2}{3}\right)$$

←  $\frac{8}{36} + \frac{1}{36}$

Apr 6-7:58 PM

ex 40

$$\frac{2x^2}{2} - \frac{16x}{2} + \frac{25}{2} = 0$$

$$x^2 - 8x + 16 = -\frac{25}{2} + \frac{16 \cdot 2}{1 \cdot 2}$$

↓ ↗

$$(x - 4)^2 = \frac{7}{2}$$

$$x - 4 = \pm \frac{\sqrt{7}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$x - 4 = \pm \frac{\sqrt{14}}{2}$$

+4    +4

$$x = \frac{4 \pm \sqrt{14}}{1}$$

$$x = \frac{8 \pm \sqrt{14}}{2}$$

Apr 6-8:03 PM

ex 56

$$(x - 8)(x + 2) = 24$$

$$x^2 + 2x - 8x - 16 = 24$$

+16    +16

$$x^2 - 6x + 9 = 40 + 9$$

↓ ↗

$$(x - 3)^2 = 49$$

$$x - 3 = \pm 7$$

+3    +3

$$x = 3 \pm 7 \begin{matrix} \nearrow 10 \\ \searrow -4 \end{matrix}$$

Apr 6-8:08 PM

ex64

$$t^2 + 6t + 9 = -10 + 9$$

$$\downarrow \nearrow$$

$$(t + 3)^2 = -1$$

$$t + 3 = \pm i$$

$$\begin{array}{cc} -3 & -3 \end{array}$$

$$t = -3 \pm i$$

Apr 6-8:11 PM

ex68

$$\frac{4x^2}{4} + \frac{5x}{4} + \frac{5}{4} = 0$$

$$\begin{array}{cccc} & & -\frac{5}{4} & -\frac{5}{4} \\ & & \downarrow & \nearrow \end{array}$$

$$x^2 + \frac{5}{4}x + \frac{25}{64} = -\frac{5 \cdot 16}{4 \cdot 16} + \frac{25}{64}$$

$$\frac{-80}{64} + \frac{25}{64}$$

$$\left(x + \frac{5}{8}\right)^2 = -\frac{55}{64}$$

$$x + \frac{5}{8} = \pm \frac{\sqrt{-55}}{8}$$

$$x + \frac{5}{8} = \pm \frac{i\sqrt{55}}{8}$$

$$\begin{array}{cc} -\frac{5}{8} & -\frac{5}{8} \end{array}$$

$$x = \frac{-5 \pm i\sqrt{55}}{8}$$

Apr 6-8:13 PM