

CHIB in class

AAT

4. (b) $6x - 3 = 4x + 24 + 2x$
 $6x - 3 = 6x + 24$
 $-3 = 24$

no solution

(c) $2x + 4 = 49$
 $2x = 45$

$x = 45/2$

(d) $48 = 1(x-4) + 10(x-10)$

$4 = x - 4 + 10x - 100$

$4 = 11x - 104$

$108 = 11x$

$108/11 = x$

wa (a) $(x+9)(x-3) = 0$
 $x = -9, x = 3$

(b) $2(x^2 + 9x + 14) = 0$
 $2(x+7)(x+2) = 0$
 $x = -7, x = -2$

(c) ac w. $-15 = -90$ } $-9, 10$
 $b = 1$

$4x^2 + 10x - 9x - 15 = 0$

$2x(3x+5) - 3(3x+5) = 0$

$(2x-3)(3x+5) = 0$

$x = 3/2, x = -5/3$

wb. (a) $(x^2 + 10x + 25) - 25 - 21 = 0$
 $(x+5)^2 - 46 = 0$
 $(x+5)^2 = 46$
 $x+5 = \pm\sqrt{46}$
 $x = -5 \pm \sqrt{46}$

(b) $(x^2 - 16x + 64) - 64 + 22 = 0$
 $(x-8)^2 - 42 = 0$
 $(x-8)^2 = 42$
 $x-8 = \pm\sqrt{42}$
 $x = 8 \pm \sqrt{42}$

(c) $3(x^2 + 6x + 9) - 27 - 7 = 0$
 $3(x+3)^2 - 34 = 0$
 $(x+3)^2 = \frac{34}{3}$

$x+3 = \pm \frac{\sqrt{34}}{\sqrt{3}} \left(\frac{\sqrt{3}}{\sqrt{3}} \right)$

$x = -3 \pm \frac{\sqrt{102}}{3}$

wc. (a) $(2x-1)^2 = 25$
 $2x-1 = \pm 5$
 $2x = 1 \pm 5$
 $x = \frac{1 \pm 5}{2}$

$x = 3, -2$

(b) $3(x+1)^2 = 21$
 $(x+1)^2 = 7$
 $x+1 = \pm\sqrt{7}$
 $x = -1 \pm \sqrt{7}$



ud. (a) $3x^2 + 7x - 17 = 0$

$$x = \frac{-7 \pm \sqrt{49 - 4(3)(-17)}}{2(3)}$$

$$x = \frac{-7 \pm \sqrt{253}}{6}$$

(b) $4.5x^2 - 3x - 7 = 0$

$$x = \frac{3 \pm \sqrt{9 - 4(4.5)(-7)}}{2(4.5)}$$

$$x = \frac{3 \pm \sqrt{135}}{9}$$

$$\begin{array}{r} 135 \\ \wedge \\ 5 \cdot 27 \\ \wedge \\ 9 \cdot 3 \end{array}$$

$$x = \frac{3 \pm 3\sqrt{15}}{9}$$

$$x = \frac{1 \pm \sqrt{15}}{3}$$

7. (a) $s = -10t^2 + 45t + 3.5$

(b) $s = -10(2.5)^2 + 45(2.5) + 3.5$
 $s = 10ft$

(c) $0 = -10t^2 + 45t + 3.5$

$$x = \frac{-45 \pm \sqrt{45^2 - 4(-10)(3.5)}}{2(-10)}$$

$$x = \frac{-45 \pm \sqrt{2249}}{-32}$$

~~$x = -0.08$~~ $x = 2.95$

8. (a) $D = (-3)^2 - 4(1)(-15)$
 $D = 9 + 60$
 $D = 69$
 $\boxed{2 \text{ real roots}}$

(b) $D = 49 - 4(2)(3)$
 $D = 25$
 $\boxed{2 \text{ real roots}}$

9. (a) $(8 - 2i) + (3 + 6i)$
 $= \boxed{11 + 4i}$

(b) $(7 + 3i) - (-2 - 4i)$
 $= 7 + 3i + 2 + 4i$
 $= \boxed{9 + 7i}$

(c) $(4 + 3i)(8 - 2i)$
 $= 32 + 24i - 8i - 6i^2$
 $= 32 + 16i + 6$
 $= \boxed{38 + 16i}$

(d) $(4 - 7i)(4 - 7i)$
 $= 16 - 28i - 28i + 49i^2$
 $= 16 - 56i - 49$
 $= \boxed{-33 - 56i}$

(e) $\frac{2 - 7i}{3 + 5i} \left(\frac{3 - 5i}{3 - 5i} \right)$
 $= \frac{6 - 21i + 10i + 35i^2}{9 + 25}$
 $= \frac{-29 - 31i}{34}$

(f) $\frac{4 + 9i}{2 - 6i} \left(\frac{2 + 6i}{2 + 6i} \right)$
 $= \frac{8 + 18i + 24i + 54i^2}{4 + 36}$
 $= \frac{-46 + 42i}{40} = \frac{-23 + 21i}{20}$

10. (a) $4x^2 = 32$
 $x^2 = 8$
 $x = \pm \sqrt{8}$
 $x = \pm 2\sqrt{2}$

(b) ~~$a = 33$~~
 $b = 9$

$$x = \frac{-9 \pm \sqrt{81 - 4(3)(11)}}{2(3)}$$

$$x = \frac{-9 \pm \sqrt{-51}}{6}$$

$$x = \frac{-9 \pm i\sqrt{51}}{6}$$

(c) $x = \frac{4 \pm \sqrt{16 - 4(2)(5)}}{2(2)}$

$$x = \frac{4 \pm \sqrt{-24}}{4}$$

$$x = \frac{4 \pm 2i\sqrt{6}}{4}$$

$$x = \frac{2 \pm i\sqrt{6}}{2}$$

11a. (a) $4x(x^2 + 4) = 0$
 $x = 0$ $x = \pm 2i$

(b) $x^2(x^2 - 3x + 2) = 0$
 $x^2(x-2)(x-1) = 0$
 $x = 0, x = 2, x = 1$

11b. (a) $u^2 - 7u - 18 = 0$
 $(u-9)(u+2) = 0$
 $(x^2-9)(x^2+2) = 0$
 $x^2 = 9$ $x^2 = -2$
 $x = \pm 3$ $x = \pm i\sqrt{2}$

(b) $2u^2 - 47u - 75 = 0$ $a = -150$ $b = -47$ $c = 75$

$$2u^2 - 50u + 3u - 75 = 0$$

$$2u(u-25) + 3(u-25) = 0$$

$$(u-25)(2u+3) = 0$$

$$(x^2-25)(2x^2+3) = 0$$

$$x^2 = 25$$
 $2x^2 = -3$

$$x = \pm 5$$

$$x^2 = -3/2$$

$$x = \pm i\sqrt{3/2} \left(\frac{\sqrt{2}}{\sqrt{2}} \right)$$

$$x = \pm i\frac{\sqrt{6}}{2}$$

11c. (a) $4x^3 - 24x^2 - x + 4 = 0$
 $4x^2(x-6) - 1(x-6) = 0$
 $(4x^2-1)(x-6) = 0$
 $4x^2 = 1$ $x = 6$
 $x^2 = 1/4$
 $x = \pm 1/2$

(b) $2x^3 - 3x^2 + 8x - 12 = 0$
 $x^2(2x-3) + 4(2x-3) = 0$
 $(x^2+4)(2x-3) = 0$
 $x^2 = -4$ $x = 3/2$
 $x = \pm 2i$

$$12. \textcircled{a} \quad \sqrt{3x+4} = 8$$

$$3x+4 = 64$$

$$3x = 60$$

$$\boxed{x=20}$$

$$c: \sqrt{60+4} = 8$$

$$\sqrt{64} = 8 \checkmark$$

$$\textcircled{b} \quad \sqrt{3x-6} = (2-x)$$

$$3x-6 = x^2-4x+4$$

$$0 = x^2-7x+10$$

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

$$x=5, x=2$$

$$c: \sqrt{15-6} \neq 5 = 2$$

$$\sqrt{9} + 5 = 2 \quad \times$$

$$c: \sqrt{6-6} + 2 = 2$$

$$\sqrt{0} + 2 = 2 \checkmark$$

$$\boxed{x=2}$$

$$13. \textcircled{a} \quad 3x+8 = 2x-1$$

$$x = -9$$

$$c: |-27+8| = -18-1$$

$$\times$$

no solution!

$$\textcircled{b} \quad x^2+4 = 3x^2-8$$

$$12 = 2x^2$$

$$6 = x^2$$

$$\pm\sqrt{6} = x$$

$$c: |6+4| = 3(6)-8$$

$$10 = 10 \checkmark$$

$$\boxed{x = \pm\sqrt{6}}$$

~~$$13. \textcircled{c} \quad x^2+1 = 5x-5$$

$$x^2-5x+6 = 0$$

$$(x-3)(x-2) = 0$$

$$x-3, x=2$$~~

~~$$x^2+1 = -5x+5$$

$$x^2+5x-4 = 0$$~~

$$3x+8 = -(2x-1)$$

$$3x+8 = -2x+1$$

$$5x = -7$$

$$x = -7/5$$

$$c: |3(-7/5)+8| = 2(-7/5)-1$$

$$\times$$

$$x^2+4 = -3x^2+8$$

$$4x^2 = 4$$

$$x^2 = 1$$

$$x = \pm 1$$

$$|1+4| = 3-8$$

$$\times$$