

p. 313

$$\#18 \quad -\frac{1}{2} \pm \frac{\sqrt{3}}{4}i$$

evens

$$\#10 \quad 10$$

$$-5 \pm 5i\sqrt{3}$$

$$\#12 \quad \frac{1}{4}$$

$$-\frac{1}{8} \pm \frac{\sqrt{3}}{8}i$$

$$\#14 \quad \frac{1}{3}, -\frac{5}{2}$$

$$\#16 \quad 4$$

$$-2 \pm 2i\sqrt{3}$$

What if:

$$x^4 + 6x^2 + 9 = 0$$

change of variable:

$$y = x^2 \rightarrow y^2 = x^4$$

$$y^2 + 6y + 9 = 0$$

$$(y+3)^2 = 0$$

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

$$x^2 + 3 = 0$$

2 imag
solutions
mult of
2 both

$$\#12 \quad 64x^3 - 1 = 0$$

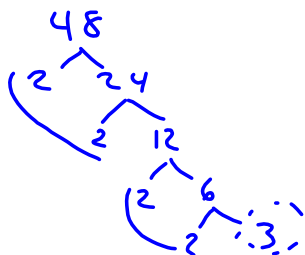
diff. of cubes

$$a = 4x \quad b = 1$$

$$(4x - 1)(16x^2 + 4x + 1) = 0$$

$$\#1 \quad 4x = 1$$

$$x = \frac{1}{4}$$



$$x = \frac{-4 \pm \sqrt{16 - 64}}{32}$$

$$= \frac{-4 \pm \sqrt{-48}}{32}$$

$$= \frac{-4 \pm i\sqrt{48}}{32}$$

$$= \frac{-4 \pm 4i\sqrt{3}}{32}$$

$$= -\frac{1}{8} \pm \frac{\sqrt{3}}{8} i$$

conjugates

14.

$$6x^2 + 13x - 5 = 0$$

$$6x^2 - 2x + 15x - 5 = 0$$

$$2x(3x - 1) + 5(3x - 1) = 0$$

$$(2x + 5)(3x - 1) = 0$$

$$x = -\frac{5}{2} \quad x = \frac{1}{3}$$

$m = -2$
 $n = 15$
factoring
by
grouping

$$\#15 \quad 0 = x^3 - 27$$

$$x^3 - 27 = 0$$

diff. of
cubes.

$$x^3 - 3^3 = 0$$

$$a=x \quad b=3$$

$$(a-b)(a^2+ab+b^2)$$

$$\#1 \quad (x-3)(x^2+3x+9)=0$$

$$x=3$$

$$\#19 \quad x^3 = 8x - 2x^2 \quad \underline{\text{Solve!}}$$

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

$$x(x^2 + 2x - 8) = 0$$

⋮

#20
change of variable

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

($y = x^2$) $y^2 - 10y + 9 = 0$

$$(y - 9)(y - 1) = 0$$

$$(x^2 - 9)(x^2 - 1) = 0$$

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

$$x = -3 \quad x = 3 \quad x = -1 \quad x = 1$$

#1 #2 #3 #4

#21 $x^4 - 8x^2 = -16$

$$x^4 - 8x^2 + 16 = 0$$

$$(x^2 - 4)^2 = 0$$

$$x^2 - 4 = \pm\sqrt{0}$$

$$x^2 - 4 = 0$$

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

$$x = -2 \quad x = 2$$

mult. of 2 mult. of 2.

($x^2 - 4$)($x^2 - 4$) = 0
 ($x+2$)($x-2$)($x+2$)($x-2$) = 0

$$\#22 \quad x^4 - 12x^2 = 64$$

$$x^4 - 12x^2 - 64 = 0$$

$$m = -16$$

$$n = 4$$

$$(x^2 - 16)(x^2 + 4) = 0$$

$$(x + 4)(x - 4)(x^2 + 4) = 0$$

$$x = -4 \quad x = 4$$

$$\#1 \quad \#2$$

$$x^2 + 4 = 0$$

$$x^2 = -4$$

$$x = \pm 2i$$

$$\#3 \quad \#4$$

$$\#26 \quad 81x^3 - 192 = 0$$

$$(27x^3 - 64) = 0$$

$$a^3 - b^3$$

$$a = 3x \quad b = 4$$

#27

$$x^4 - 64 = 0$$

$$y = x^2$$

$$y^2 - 64 = 0$$