

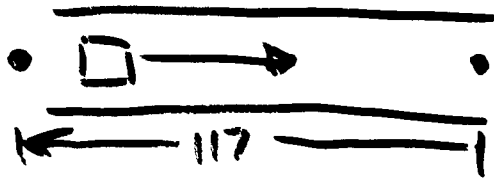
Alg. 1 - BE - MONDAY 1-30-12

Ref.:
OBQ3
#29,30

Let $b =$ ^(RATE) speed of boat ($\frac{\text{miles}}{\text{hr}}$)

$c =$ speed of current ($\frac{\text{miles}}{\text{hr}}$)

$d = r t$



$d = 117$ down stream

$d = 117$ up stream

$\boxed{234}$ miles total

$t = 13$ hrs down stream

$t = 39$ hrs up stream

① SOLVE

$$\begin{cases} 117 = (b+c)13 \\ 117 = (b-c)39 \end{cases} \text{ or } \begin{cases} 234 = \dots \\ 234 = \dots \end{cases} *$$

$d = (\text{RATE}) \cdot \text{time}$ * poorly worded

② WHY DO RIVERS FLOW DOWNSTREAM?

1.
MATHFORUM.ORG great site for
MATH HELP. Go to "ASK DR. MATH"
AND USE THE SEARCH BOX. I went
there AND input factor by grouping
AND FOUND A VERY GOOD EXPLANATION
AND SOME USEFUL TIPS THAT ARE NOT
IN THE BOOK AND ARE NEW TO ME:

EX) A 4 term POLYNOMIAL HAS 3
possible groups: $a + b + c + d$

① $(a + b) + (c + d)$

② $(a + c) + (b + d)$

③ $(a + d) + (b + c)$

IF FBG WORKS, 2 OF THESE GROUPS WILL
WORK AND 1 WILL NOT!

IF FBG DOES NOT WORK, 0 OF THE
GROUPS WILL WORK!

A 'trinomial' with ONE variable of degree 2 is WRITTEN IN STANDARD form if it is written in descending order by degree:

$$\boxed{ax^2 + bx + c}$$

EX) $3x^2 + 5x + 2$ $a = 3$
 $b = 5$
 $c = 2$

EX) $9x^2 - 4x - 3$ $a = 9$
 $b = -4$
 $c = -3$

EX) $-8x^2 + x$ $a = -8$
 $b = 1$
 $c = 0$

EX) $7x^2$ $a = 7$
 $b = 0$
 $c = 0$

if $a = 0$, you no longer HAVE A POLYNOMIAL of degree 2, you HAVE a POLYNOMIAL of degree 1 WHICH is linear.

$$y = f(x) = mx + b$$

$$y = f(x) = ax + b$$

$$y = f(x) = ax$$

or, for comparison

linear function,

x^1 is highest degree

STILL A line, a direct variation

$$y = f(x) = ax^2 + bx + c$$

$$y = f(x) = ax^2$$

x^2 is highest degree, not a line but a curve called a parabola

↑
STILL A parabola

QUADRATIC FUNCTION

if $y = 0$

$$0 = ax^2 + bx + c$$

STANDARD FORM OF A QUADRATIC EQUATION

$$0 = () ()$$

FACTOR

$$0 = a \cdot b$$

SOLVE BY ZPP

if $ax^2 + bx + c$ is prime, can't solve BY FACTORING

How to factor $ax^2 + bx + c$ IF
it can be factored (is not prime)

MAGIC NUMBER METHOD

FACTOR: $2x^2 + 4x^2 + 17x = -5$

Step 1 Put in STANDARD form: $ax^2 + bx + c$

$$6x^2 + 17x + 5 = 0 \quad \begin{array}{l} a = 6 \\ b = 17 \\ c = 5 \end{array}$$

STEP 2 Find 2 magic numbers whose
sum is $b = 17$ and product is $ac = 30$

$$6x^2 + 17x + 5 = 0$$

$$b = \text{sum} = 17$$

$$ac = \text{prod} = 30$$

$$+2 \quad +15$$

PUT + or - NEXT TO NUMBERS

STEP 3 Split MIDDLE TERM INTO MAGIC TERMS
AND FBG!

$$(6x^2 + 2x) + (15x + 5) = 0$$

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

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

SOLVE
EQUATION
w/ ZPP

$$x = \left\{ -\frac{1}{3}, \frac{5}{2} \right\}$$

⊙ Ex Solve $7x^2 + 22x + 3 = 0$

$7x^2 + 22x + 3 = 0$ in S.F. ✓

$b = \text{sum} = 22$
 $ac = \text{prod} = 21$
 $+1 \quad +21$

$(7x^2 + 1x) + (21x + 3) = 0$

$x(7x + 1) + 3(7x + 1) = 0$

$(7x + 1)(x + 3) = 0$

$x = \left\{ -\frac{1}{7}, -3 \right\}$

⊙ Ex $8a^2 - 9a - 5 = 4 - 3a$

$8a^2 - 6a - 9 = 0$

$b = \text{sum} = -6$
 $ac = \text{prod} = -72$
 $+6 \quad -12$

LOOK

(SIGNS!)

72
 $(2) \quad 36$
 $6 \quad 6$
 $(2)(3)(2)(3)$

$(8a^2 - 12a) + (6a - 9) = 0$

$4a(2a - 3) + 3(2a - 3) = 0$

$(2a - 3)(4a + 3) = 0$

$x = \left\{ \frac{3}{2}, -\frac{3}{4} \right\}$

EX4 P5497

Homework:

Pg. 499 # 10 to 12
35 to 38

WE JUST FINISHED CH. 9-3 AND 9-4
