Solve + Show work.

① $3x+1=0$
$-1\ \ -1$
$\frac{3x}{3} = \frac{-1}{3}$
$x=-\frac{1}{3}$

② $-x+3=0$
$-3\ \ -3$
$\frac{-x}{-1} = \frac{-3}{-1}$
$x=3$

③ $x-4=0$
$+4\ \ +4$
$x=4$

④ $x+3=x-5$
$-x\ \ -x$
$3=-5$
no solution
false

⑤ $x+3=x+3$
$-x\ \ -x$
$3=3$
all number
true

Factor

⑥ x^2+5x+6
$(x+3)(x+2)$

⑦ x^2-25
$(x-5)(x+5)$

⑧ x^2+16 x^2+16 $i=\sqrt{-1}$
x^2+16
$(x-4i)(x+4i)$

⑨ $4x^3+8x^2+4x$
$4x(x^2+2x+1)$
$4x(x+1)(x+1)$
$4x(x+1)^2$

⑩ $16x^2-16$
$16(x^2-1)$
$16(x-1)(x+1)$

Solve a Quadratic Equation by factoring

$ax^2+bx+c=0$ vs. $ax+b=0$ ← constant term

algII ↑ ↑ algI

ax^2 ← quadratic term

$ax^1+b=c$

x^1 linear

LINE

↑ linear term

Why this is legal.

$A \cdot B = 0$ ← zero

↑ one ↑ time ↑ another ↑ equal to

alg arm (2) 3/1/04

if $A \cdot B = 0$

then $A = 0$ or $B = 0$ or both $= 0$

one or both equal zero.

solve

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

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

$x+2=0$ $\quad$ $x+3=0$

$-2\ -2$ $\quad$ $-3\ \ -3$

$x = -2$ $\quad$ $x = -3$

$x = -2$ or -3

(12) $x^2 - 7x + 10 = 0$

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

$x-5=0$ $\quad$ $x-2=0$

$+5\ +5$ $\quad$ $+2\ \ +2$

$x = 5$ $\quad$ $x = 2$

$x = 5$ or 2

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

$x(x-4) = 0$

$x = 0$ $\quad$ $x-4=0$

$+4\ +4$

$x = 4$

$x = 0$ or 4

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

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

$x-2=0$ $\quad$ $x+2=0$

$+2\ +2$ $\quad$ $-2\ -2$

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

$x = 2$ or -2

(15) $x^2 + 9x = -14$

$+14\ \ +14$

$x^2 + 9x + 14 = 0$

$(x+7)(x+2) = 0$

$x+7=0$ $\quad$ $x+2=0$

$-7\ -7$ $\quad$ $-2\ -2$

$x = -7$ $\quad$ $x = -2$

$x = -7$ or -2

Reviewed 3/1 1st

Pg 417 Hw.

Solve

#19) $16x^2 - 49 = 0$

$(4x+7)(4x-7)=0$

$4x+7=0$ $\quad 4x-7=0$

$-7\ -7 \quad +7\ +7$

$\frac{4x}{4} = \frac{-7}{4} \quad \frac{4x}{4} = \frac{7}{4}$

$x = -\frac{7}{4} \quad x = \frac{7}{4}$

$x = \pm\frac{7}{4}$

"plus or minus" means both a positive number and a negative answer.

#21) $3a^2 + 14a + 8 = 0$

$3 \cdot 8 = 24$

$1 \cdot 24$

$2 \cdot 12$

$3 \cdot 8$

$4 \cdot 6$

$(1x+4)(3x+2)=0$

$(x+4)(3x+2)=0$

$1 \cdot 8$

$2 \cdot 4$

$(3x+2)(1x+4)=0$

$3x+2=0 \quad x+4=0$

$-2\ -2 \quad -4\ -4$

$\frac{3x}{3} = \frac{-2}{3} \quad x = -4$

$x = -\frac{2}{3}$

#58) $(a-4)(a+7) = -18$

$+18\ +18$

$(a-4)(a+7)+18=0$

$a^2 + 3a - 28 + 18 = 0$

$a^2 + 3a - 10 = 0$

$(a-2)(a+5)=0$

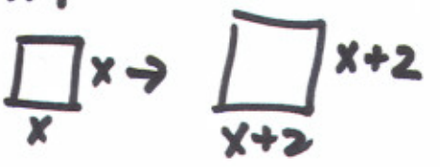
$a-2=0 \quad a+5=0$

$+2\ +2 \quad -5\ -5$

$a=2 \quad a=-5$

Pg 419

#76)



area = 64

(length)(width) = 64

$(x+2)(x+2) = 64$

$-64\ -64$

#80) $(x+2)(x+2) - 64 = 0$

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

$x^2 + 4x - 60 = 0$

$(x-6)(x+10)=0$

$(x=6, x=-10)$

60

1 60

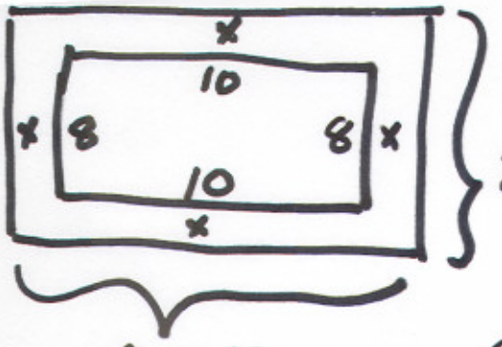
2 30

3 20

4 15

5 12

6 10



area = 143

(width)(length) = 143

$(2x+8)(2x+10) = 143$

$-143 \quad -143$

$2x+8$

$2x+10$

$(2x+8)(2x+10) - 143 = 0$

$4x^2+16x+20x+80 - 143 = 0$

$4x^2+36x - 63 = 0$

$(2x+21)(2x-3) = 0$

1	63
4	−3
	−21
2	
2	
	7
	9

$2x+21=0 \quad 2x-3=0$

$-21 \quad -21 \quad +3 \quad +3$

$\frac{2x}{2} = \frac{-21}{2} \quad \frac{2x}{2} = \frac{3}{2}$

$x = -\frac{21}{2} \quad x = 3/2$

can't be used

walkway is $1\frac{1}{2}$ ft wide

$63(4)$

252

1·252
2·126
3·84
4·63
6·42
7·36
9·28
12·21
14·18

63	
1·63	
3·21	
7·9	

4	
1·4	

3/3/04 am ①

There is a rectangle.
The length is one more than twice the width.
Find perimeter. Find area.

one more than twice width

(perimeter) (area)

2(length) + 2(width) (length)(width)

2(2x+1) + 2(x) (2x+1)(x)

4x + 2 + 2x $2x^2 + x$

6x + 2

pg 418 # 64, 70, 72

64) the square of a negative number is 15 more than twice the negative number. Find the number.

(square) = 2(number) + 15

$(number)^2 = 2(number) + 15$

$x^2 = 2x + 15$

$-2x - 15 \quad -2x - 15$

$x^2 - 2x - 15 = 0$

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

$x = -3 \quad x = 5$

$x = -3$

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

$x+3 = 0 \quad x-5 = 0$

$-3 \ -3 \quad +5 \ +5$

$x = -3 \quad x = 5$

p418 ② 3/3/04 am

70) the product of two consecutive positive even integers is one hundred sixty-eight. Find the two integers.

(product) = 168

(1st)(2nd) = 168

(x)(x+2) = 168

$x^2 + 2x = 168$

$-168 \quad -168$

$x^2 + 2x - 168 = 0$

$(x - 12)(x + 14) = 0$

$x - 12 = 0 \qquad x + 14 = 0$

$+12 \quad +12 \qquad -14 \quad -14$

$x = 12 \qquad x = -14$

$x = 12 \qquad x + 2 = 14$

12 & 14

168

1 · 168

2 · 84

3 · 56

4 · 42

6 · 28

7 · 24

8 · 21

-12 · -14

3/3/04 ③ am

P418 #72

the height of a triangle is 4m more than twice the length of the base.

the area of the triangle is $35m^2$. Find the height.

(area of △) = (base)(height)/2

$35 = (\text{base})(2(\text{base})+4)/2$

$35 = x(2x+4)/2$

$35 = x(x+2)$

$-35 \qquad -35$

$0 = x(x+2) - 35$

$0 = x^2 + 2x - 35$

$0 = (x+7)(x-5)$

$x+7=0 \quad x-5=0$

$-7-7 \quad +5+5$

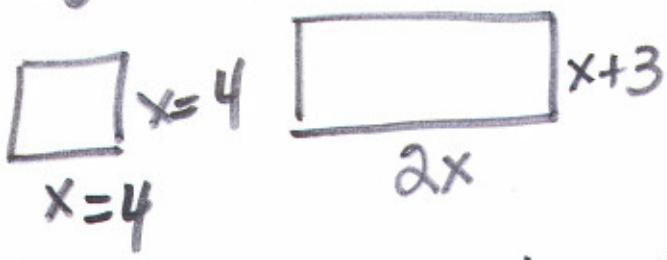
$x=-7 \quad x=5$

Height $= 2x+4 =$

$2(5)+4 = \underline{\underline{14\,m}}$

3/4/04 ① am

If a square has its base doubled and its height increased by 3 ft., the area is increased by 40 sq. ft. Find the length of the orig. square



The area increases by 40 sq. ft.

(area of square) + 40 = (area of rectangle)

$x^2 + 40 = (\text{length})(\text{width})$

$x^2 + 40 = (2x)(x+3)$

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

$-2x^2 - 6x \qquad -2x^2 - 6x$

$-1(-x^2 - 6x + 40) = (0)(-1)$

$x^2 + 6x - 40 = 0$ · Rerun

$(x+10)(x-4) = 0$ · Quiz

$x + 10 = 0 \qquad x - 4 = 0$

$-10 \quad -10 \qquad +4 \quad +4$

$x = -10 \qquad x = 4$

3/4/04 (2) am

/320/ solquad.txt

Solve quadratic equations by factoring.

1st: Put everything on one side and 0 on the other.
2nd: FACTOR THE ENTIRE SIDE.
3rd: Set each factor equal to zero.
4th: Solve each new equation.
(5th: Discard extra answers that don't meet requirement.)

Solve: $x^2 + 5x = -6$

1st: Put everything on one side and 0 on the other.

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

2nd: FACTOR THE ENTIRE SIDE.

$$x^2 + 5x + 6 = 0$$
$$(x+2)(x+3) = 0$$

3rd: Set each factor equal to zero.

$$x^2 + 5x + 6 = 0$$
$$(x+2)(x+3) = 0$$
$$x+2 = 0 \quad x+3 = 0$$

4th: Solve each new equation.

$$x^2 + 5x + 6 = 0$$
$$(x+2)(x+3) = 0$$
$$x+2 = 0 \quad x+3 = 0$$
$$-2 \quad -2 \qquad -3 \quad -3$$
$$x = -2 \qquad x = -3$$

(5th: Discard extra answers that don't meet requirement.)

$$x^2 + 5x + 6 = 0$$
$$(x+2)(x+3) = 0$$
$$x+2 = 0 \quad x+3 = 0$$
$$-2 \quad -2 \qquad -3 \quad -3$$
$$x = -2 \qquad x = -3$$