Find intersection of: SECTION 2.3

$x - y = 3$ and $y = x^2 + 5x + 1$

$x = 3 + y$

$y = (3+y)^2 + 5(3+y) + 1$

$y = 9 + 6y + y^2 + 15 + 5y + 1$

$y^2 + 10y + 25 = 0$

$(y + 5)(y + 5) = 0$

$y = -5$

$x = 3 - 5 = -2$

Solution $(-2, -5)$

p.58, 59 Section 2.4

Q1 p.59

Find the values of 2 consecutive numbers, the sum of their squares is 61.

$x =$ one no. $y =$ other no.

$x = y + 1$ $x^2 + y^2 = 61$

$(y+1)^2 + y^2 = 61$

$y^2 + 2y + 1 + y^2 = 61$

$2y^2 + 2y - 60 = 0$

$y^2 + 1 - 30 = 0$

$(y - 5)(y + 6) = 0$

$y = 5, -6$

$x = 5 + 1 = 6$

$(6, 5)$

$x = -6 + 1 = -5$

$(-5, -6)$

HW p58 Q15

Solve $2t - 3s = 1 \Rightarrow t = \frac{3s+1}{2}$

$t^2 + ts - 4s^2 = 2$

$$\left(\frac{3s+1}{2}\right)^2 + \left(\frac{3s+1}{2}\right)s - 4s^2 = 2$$

$$\frac{9s^2+6s+1}{4} + \frac{3s^2+s}{2} - 4s^2 = 2$$

$$9s^2+6s+1 + 6s^2+2s - 16s^2 = 8$$

$$-1s^2 + 8s - 7 = 0$$

$$s^2 - 8s + 7 = 0$$

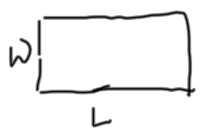
$$(s-1)(s-7) = 0$$

$$s = 1, 7$$

$$t = \frac{3(1)+1}{2} = 2$$

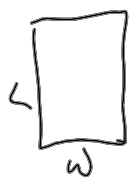
$$t = \frac{3(7)+1}{2} = 11$$

p.59 Q3 and Q4



P=62m

A=198m²



$$2w + 2L = 62$$

$$LW = 198$$

$$w = \frac{198}{L}$$

$$2\left(\frac{198}{L}\right) + 2L = 62$$

$$396 + 2L^2 = 62L$$

$$L^2 - 31L + 198 = 0$$

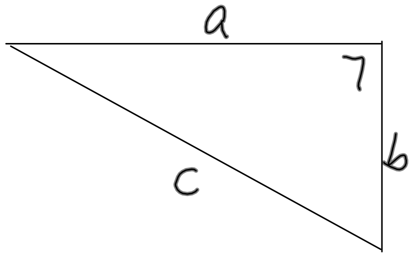
$$(L-22)(L-9) = 0$$

$$L = 22, 9$$

$$w = \frac{198}{22} = 9$$

$$w = \frac{198}{9} = 22$$

Q4



Pythagoras Theorem

$$a^2+b^2=c^2$$

Consecutive nos

$c=a+1$, $a=\underline{b+1}$, $c=\underline{b+2}$

P=?

$$(b+1)^2+b^2=(b+2)^2$$

$$\cancel{b^2}+2b+1+b^2=\cancel{b^2}+4b+4$$

$$b^2-2b-3=0$$

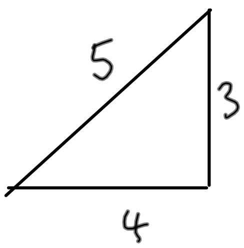
$$(b-3)(b+1)=0$$

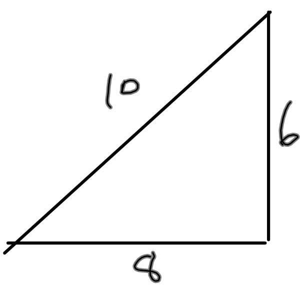
$$b=3,\ \cancel{-1} \rightarrow$$

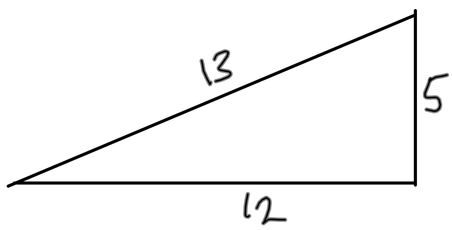
$b=3$
$a=4$
$c=5$
$P=12$

Pythagoras $a^2+b^2=c^2$

Examples of integer Solutions to pythagoras theorem

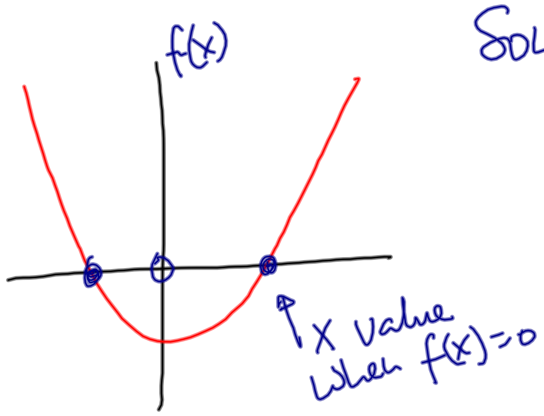






ROOTS of QUADRATICS

SOLUTIONS



minus
Sum of Roots

SOLVE?

PRODUCT
OF ROOT

$$f(x) = x^2 + 2x + 1$$

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

$x+1=0$	$x+1=0$
$x=-1$	$x=-1$

Root
OR
Solution

$$f(x) = 1x^2 - (r_1 + r_2)x + r_1 r_2$$

minus sum of roots

product of roots

$$x = r_1 \,, \; r_2$$

eg.. Roots are 7 and −5

$\Rightarrow f(x) = 1x^2 - 2x - 35$

Homework 18-10-2012

P.62 Q1 a) c) e)

Q3 i) ii) iii) iv)

Ex. 2.5 Q.1

(a) $x^2 + 9x + 4 = 0$

Sum of Roots =

Product of Roots =

(c) $x^2 - 7x + 2 = 0$

Sum of Roots =

Product of Roots =

(e) $2x^2 - 7x + 1 = 0$

Sum of Roots =

Product of Roots =

Ex 2.5
Q3

Find the quadratic equation that has the following pairs of roots (r_1, r_2)

(i) $(4, 6)$

(ii) Find the quadratic equation that has the following pairs of roots (r_1, r_2)

$(2, -3)$

(iii) Find the quadratic equation that has the following pairs of roots (r_1, r_2)

$(-5, -1)$

(iv) Find the quadratic equation that has the following pairs of roots (r_1, r_2)

$(\sqrt{5}, 4)$