4.2 Factoring Quadratics

ex1 Solve $2x^2-2x-12=0$ by factoring

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

$x^2-x-6=0$

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

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

$x=3 \quad x=-2$

prod -6
sum -1
-3, 2

ex 2 Solve $\frac{1}{4}x^2 - x - 3 = 0$ by factoring

$\times 4$

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

prod -12
sum -4
$-6, 2$

$(x-6)(x+2) = 0$

$x - 6 = 0 \quad x + 2 = 0$

$x = 6 \quad x = -2$

ex3 Solve $2x^2+7x+3=0$

prod 6
sum 7

6, 1

decomposition

$2x^2+6x+x+3=0$

$2x^2$

$(2x \quad 1)(x \quad 3)$

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

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

$x+3=0$ $\quad 2x+1=0$

$x=-3$ $\quad 2x=-1$

$x=-\frac{1}{2}$

x^2+2x+2

$4-8 \quad -4$

ex 4 solve $64x^2 - 9 = 0$

$ax^2 + bx + c$

difference of squares.

$(8x)^2 - (3)^2$

$a^2 - b^2$

$(a+b)(a-b)$

$64x^2 = 9$

$8x = \pm 3$

$x = \pm \frac{3}{8}$

$(8x+3)(8x-3) = 0$

$8x+3=0$ $\quad$ $8x-3=0$

$8x=-3$ $\quad$ $8x=3$

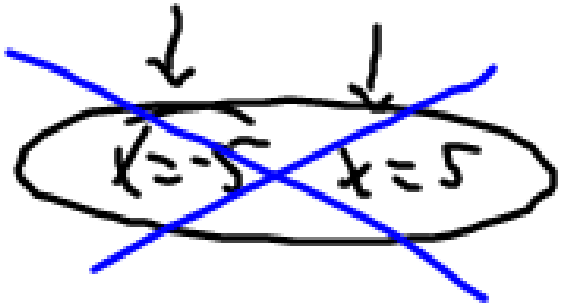
$x=-\frac{3}{8}$ $\quad$ $x=\frac{3}{8}$

ex 5 Factor $9x^2 - 0.64y^2$

$(3x - 0.8y)(3x + 0.8y)$

factor $x^2 - 25$

$(x+5)(x-5)$



ex 6 Solve $12(x+2)^2 + 24(x+2) + 9 = 0$

let $a = x+2$ $\quad x = a-2$

$12a^2 + 24a + 9 = 0$

$4a^2 + 8a + 3 = 0$

$(2a+1)(2a+3) = 0$

$2a+1=0 \quad 2a+3=0$

$2a=-1 \quad 2a=-3$

$a=-1/2 \quad a=-3/2$

* $x=-2\,1/2 \quad x=-3/2$

$12(x^2+4x+4) + 24(x+2) + 9 = 0$

$12x^2+48x+48+24x+48+9=0$

$12x^2+72x+105=0$

$4x^2+24x+35=0$

$(2x+7)(2x+5)=0$

$2x+7=0 \quad 2x+5=0$

$x=-\frac{7}{2} \quad x=-\frac{5}{2}$

$2\sin^2 x + \sin x + 1$

ex 7 Solve $2x^2 - 9x - 5 = 0$

p -10
5 -9
$-10, 1$

$2x^2 - 10x + x - 5 = 0$

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

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

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

ex 8 (ex 4 pg 226) $h = -\frac{3}{10}d^2 + \frac{11}{10}d + 2$

$0 = -\frac{3}{10}d^2 + \frac{11}{10}d + 2$

$0 = -3d^2 + 11d + 20$

$0 = -3d^2 + 15d - 4d + 20$

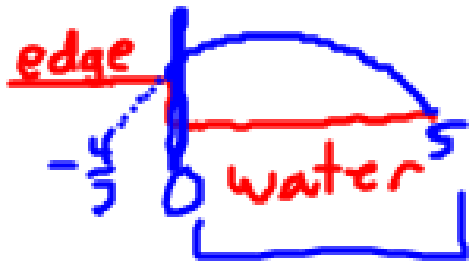
$0 = -3d(d-5) - 4(d-5)$

$0 = (d-5)(-3d-4)$

$d = 5 \qquad d = -\frac{4}{3}$

5 feet

p -60
s 11
15, -4



ex 9 (ex 5 pg 228)

$A = LW \qquad L = 2w - 10$

$A = (2w - 10)w$

$A = 2w^2 - 10w$

$6600 = 2w^2 - 10w$

$0 = 2w^2 - 10w - 6600$

$0 = w^2 - 5w - 3300$

$0 = (w - 60)(w + 55)$ $60, -55$

$w = 60m$

$L = 110m$

$w = -55$

Monday: 7-14 pgs 230-231

Tuesday: 15-28, 30 pgs 231-233