

Date:

Chp: Chp. 5:3 → Solving Quad.
Eqs. by Factoring

Obj: • Write quad. eqs. in
intercept form.
• Solve quad. eqs. by factoring

Notes:

* Factored Form = $0 = a(x-p)(x-q)$

$p \leq q$ are x-intercepts.

$a = \text{GCF}$

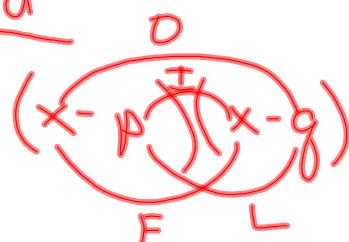
FOIL Method

F = First

O = Outer

I = Inner

L = Last



$$x^2 - xq - xp + pq$$

O I

Factoring Techniques

$$1) \text{GCF} \rightarrow a^3b^2 - nab^2 = \cancel{ab^2}(a^2 - n) \quad \text{GCF} \quad \text{leftovers}$$

$$2) \text{General Trinomials} \rightarrow$$

$$3.2 \quad \cancel{ax^2 + (ad+bc)x + bd} = (ax+b)(cx+d)$$

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

$$3) \text{Diff. of 2 Squares} \rightarrow$$

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

$$a^2 - 4 = (a+2)(a-2)$$

$$4) \text{Perfect Square Trinomial}$$

$$a^2 \pm 2ab + b^2 = (a \pm b)^2$$

$$a^2 \pm 2a(2) + 2^2$$

$$a^2 \pm 4a + 4 = (a \pm 2)^2$$

Zero Product Prop.

If $a \cdot b = 0$ then $a = 0$, $b = 0$, or
both = 0

Examples:Ex. 1 - Factor.

a) $27y^2 + 18y$
 $(3y)(3y+2)$

b) $15x + 25x^2$
 $5x(3+5x)$

c) $12xy + 24x^2y^2 - 30x^2y^4$
 $(6xy)(2+4y-5xy^3)$

Ex. 2 - Factor by Grouping

a) $(4pr+8r)(3p+6)$

$4r(p+2) + 3(p+2)$
 $(4r+3)(p+2)$

b) $2xy + 7x + 2y + 7$
 $(2xy+2y)+(7x+7)$
 $2y(x+1) + 7(x+1)$
 $(2y+7)(x+1)$

c) $(15a-3ab)+(4b-20)$
 $3a(5-b) + 4(b-5)$
 $-3a(-5+b) + 4(b-5)$
 $(3a+4)(b-5)$

Ex. 3 - Write a quad eq in standard form.

a) $3/4x^2 - 5$

$\frac{3}{4} = \frac{3}{4}x^2$ | $x+5$ | $x^2 + \frac{17}{4}x - \frac{15}{4}$

b) $-1/3x^2 - 6$
 $(x+1/3)(x-6)$

$x^2 - 6x + \frac{1}{3}x - 2$
 $\frac{1}{3}x^2 - \frac{17}{3}x - 2$
 $\frac{1}{3}x^2 - 3x - 6$

Ex. 4 - Factor

a) $x^2 - 2y - 24$
 $(x+4)(x-6)$

b) $x^2 - 81$
 $(x+9)(x-9)$

c) $10x^2 - 9x^2$
 $(x+3)(x-4)$

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

e) $x^2 - 13x - 48$
 $(x+16)(x-3)$

f) $x^2 - 11x + 30$
 $(x-5)(x-6)$

g) $x^2 - 4x - 21$
 $(x-7)(x+3)$

h) $x^2 - 11$
 $(x-2)(x+2)$

i) $9x^2 - 11$
 $(3x-4)(3x+4)$

j) $64x^2 - 1$
 $(8x+1)(8x-1)$

k) $25x^2 - 100$
 $(5x-10)(5x+10)$

l) $3w^2 - 27w$
 $3w(w-9)$

m) $3w^2 - 27w + 54$
 $3w(w-3)$

n) $x^2 - 20x + 100$
 $4(x-2)(x-10)$

o) $x^2 - 2x + 1$
 $(x-1)^2$

p) $2x^2 + 5x + 3$
 $(2x+3)(x+1)$

q) $12x^2 - 3x - 2$
 $(4x+1)(3x-2)$

r) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

s) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

t) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

u) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

v) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

w) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

x) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

y) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

z) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

aa) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

bb) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

cc) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

dd) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ee) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ff) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

gg) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

hh) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ii) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

jj) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

kk) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ll) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

mm) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

nn) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

oo) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

pp) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

qq) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

rr) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ss) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

tt) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

uu) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

vv) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ww) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

xx) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

yy) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

zz) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

aa) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

bb) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

cc) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

dd) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ee) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ff) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

gg) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

hh) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ii) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

jj) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

kk) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ll) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

mm) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

nn) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

oo) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

pp) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

qq) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

rr) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ss) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

tt) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

uu) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

vv) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ww) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

xx) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

yy) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

zz) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

aa) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

bb) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

cc) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

dd) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ee) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ff) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

gg) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

hh) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ii) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

jj) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

kk) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ll) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

mm) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

nn) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

oo) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

pp) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

qq) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

rr) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ss) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

tt) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

uu) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

vv) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ww) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

xx) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

yy) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

zz) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

aa) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

bb) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

cc) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

dd) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ee) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ff) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

gg) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

hh) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ii) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

jj) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

kk) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ll) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

mm) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

nn) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

oo) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

pp) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

qq) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

rr) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ss) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

tt) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

uu) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

vv) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

ww) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

xx) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

yy) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

zz) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

aa) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

bb) $1/2x^2 - 3x - 2$
 $(1/2x+1)(x-2)$

Homework:

P.272 (#17-19, 26-42 E, 79, 87)