

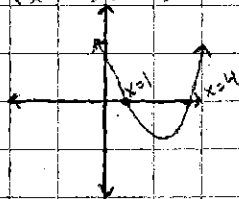
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Solving Quadratic Equations by factoring

Review: connection between functions + equations

$$y = x^2 - 5x + 4$$

$$y = (x-4)(x-1)$$



$$x^2 - 5x + 4 = 0$$

$$(1)^2 - 5(1) + 4 = 0$$

$$1 - 5 + 4 = 0$$

$$0 = 0 \quad \checkmark$$

$x=4$

$$(4)^2 - 5(4) + 4 = 0$$

$$16 - 20 + 4 = 0$$

$$0 = 0 \quad \checkmark$$

x-ints are solutions to equation

Zero Principle:

If 2 numbers, a and b, have a product of zero ($(a)(b) = 0$), then either $a = 0$ or $b = 0$ or a and b both equal zero.

So, if $x^2 - 5x + 4 = 0$ then $(x-4)(x-1) = 0$ and either $(x-4) = 0$ or $(x-1) = 0$
Therefore $\boxed{x=4 \text{ or } x=1}$

Ex 1) $x^2 + 4x - 12 = 0$
 $(x+6)(x-2) = 0$
 $\boxed{x = -6 \quad x = 2}$

Ex 3) $2x^2 + 14x = 0$
 $2x(x+7) = 0$
 $\boxed{x = 0 \quad x = -7}$

Ex 5) $3m^2 - 14m + 8 = 0$
 $24 < -12$
 $3m^2 - 12m - 2m + 8 = 0$
 $3m(m-4) - 2(m-4) = 0$
 $(3m-2)(m-4) = 0$
 $\boxed{m = \frac{2}{3} \quad m = 4}$

Ex 2) $x^2 - x - 30 = 0$
 $(x-6)(x+5) = 0$
 $\boxed{x = 6 \quad x = -5}$

Ex 4) $x^2 - 81 = 0$
 $(x-9)(x+9) = 0$
 $\boxed{x = \pm 9}$

$3m - 2 = 0$
 $3m = 2$
 $m = \frac{2}{3}$

Ex 6) $5a^2 + 6a + 1 = 0$
 $5a^2 + 5a + a + 1 = 0$
 $5a(a+1) + 1(a+1) = 0$
 $(5a+1)(a+1) = 0$
 $\boxed{a = -\frac{1}{5} \quad a = -1}$

Ex 7) $2x^2 - 3x = 9$
 $2x^2 - 3x - 9 = 0$
 $-18 < -9$
 $2x^2 - 6x + 3x - 9 = 0$
 $2x(x-3) + 3(x-3) = 0$
 $(2x+3)(x-3) = 0$
 $\boxed{x = -\frac{3}{2} \quad x = 3}$

★ don't drop = 0

p. 405 #1-4