Quadratic Equation Practice Problems

Math 130 *Kovitz* 2012

In each part: decide which method you will use to find the solution or solutions. Then solve for x.

Only find real-numbered solutions; ignore any imaginary solutions.

These problems may be treated as calculator problems, where you use a regular scientific calculator as needed. But give answers in exact decimal or radical form, no approximate answers.

Suggested methods include:

- Factoring as a Perfect Square.
- Factoring over the integers.
- Completing the Square.
- Quadratic Formula.

(a) $4x^2 - \frac{4}{7}x + \frac{1}{49} = 0.$

(b) $x^2 - 4x - 77 = 0.$

(c) $x^2 + x + 1 = 0.$

(d) $x^2 + 4x = 16.$

(e) $x^2 + 4x = 21.$

(f) $x^2 + 3x - 28 = 0.$

(g) $3x^2 - 18x + 4 = 0.$

(h) $24x^2 + 10x = 99.$

(i) $4x^2 + 16x = -15.$

(j) $x^2 - 286x = -20253.$

(k) $4x^2 = 6x.$

(l) $x^2 - 8x = 1.$

(m) $x^2 + 1 = 0.$

(n) $x^2 + 9x + 20.25 = 0.$

(o) $-5x^2 + 72x - 28 = 0.$

(p) $-16x^2 + 51x - 9 = 0.$

(q) $-16x^2 + 60x + 16 = 0.$

(r) $-5x^2 + 31x + 11 = 0.$

(s) $x^2 + \sqrt{3}x + .5 = 0.$

(t) $x^2 - x + 0.1875 = 0.$

(u) $x^2 - \frac{9}{20}x - 1 = 0.$

(v) $x^2 - \frac{77}{30}x + 1.5 = 0.$

(w) $x^2 - \frac{3}{4}x - 3.375 = 0.$

(x) $x^2 - 0.11x + 0.003 = 0.$

(y) $x^2 - \frac{1}{14}x - \frac{3}{49} = 0.$

(z) $x^2 = 49.$

(a) $1/14$, perfect square.

(b) -7 and 11, factoring.

(c) no real solutions, quadratic formula.

(d) $-2 \pm 2\sqrt{5}$, completing the square or quadratic formula.

(e) -7 and 3, factoring.

(f) -7 and 4, factoring.

(g) $3 \pm \frac{1}{3}\sqrt{69}$, completing the square or quadratic formula.

(h) $-9/4$ and $11/6$, quadratic formula.

(i) -2.5 and -1.5, factoring.

(j) 129 and 157, completing the square. Not the quadratic formula, and certainly not factoring.

(k) 0 and $3/2$, factoring.

(l) $4 \pm \sqrt{17}$, completing the square.

(m) No real solutions, quadratic formula or completing the square gives imaginary solutions.

(n) -4.5, perfect square.

(o) 0.4 and 14, quadratic formula or completing the square with use of a calculator.

(p) $3/16$ and 3, quadratic formula.

(q) $-1/4$ and 4, factoring.

(r) $3.1 \pm \frac{1}{10}\sqrt{1181}$, quadratic formula.

(s) $\frac{-\sqrt{3}\pm 1}{2}$, quadratic formula.

(t) $1/4$ and $3/4$, completing the square.

(u) -0.8 and 1.25; quadratic formula, or multiply by 20, then factor.

(v) 0.9 and $5/3$; first multiply by 30, then quadratic formula or factoring.

(w) $-3/2$ and $9/4$; quadratic formula, or multiply by 8 then factor, or complete the square.

(x) 0.05 and 0.06, quadratic formula.

(y) $-3/14$ and $2/7$; quadratic formula, or complete the square, or multiply by 49 then factor.

(z) ± 7, completing the square or factoring.