p. 674) 34 – 42 even, 46 – 48

34 ± 4 **36** $-3.65, 1.65$ **38** $-5.61, 1.61$ **40** ± 0.77

42 $-18, -8$ **46** 1995 **47** 1993 **48** a) $h = -16t^2 + 45t + 2.5$

b) ≈ 2.7 sec

---

34 SQUARE ROOT METHOD

$$\frac{-2x^2}{-2} = \frac{-32}{-2}$$

$$\sqrt{x^2} = \sqrt{16}$$

$$x = \boxed{\pm 4}$$

---

36 QUAD FORMULA

$$x^2 + 2x - 6 = 0$$
$$a = 1 \quad b = 2 \quad c = -6$$

$$x = \frac{-2 \pm \sqrt{2^2 - 4(1)(-6)}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{28}}{2}$$

$$x = \boxed{-3.65, 1.65}$$

---

38 COMPLETING THE SQUARE

$$x^2 + 4x = 9 \qquad \frac{4}{2} = 2^2 = 4$$

$$x^2 + 4x + 4 = 9 + 4$$

$$\sqrt{(x+2)^2} = \sqrt{13}$$

$$x + 2 = \pm\sqrt{13}$$
$$ -2 \quad -2$$

$$x = -2 \pm \sqrt{13}$$

$$x = \boxed{-5.61, 1.61}$$

---

40 SQUARE ROOT METHOD

$$11x^2 - 1 = 6x^2 + 2$$
$$-6x^2 \qquad -6x^2$$

$$5x^2 - 1 = 2$$
$$ +1 \quad +1$$

$$\frac{5x^2}{5} = \frac{3}{5}$$

$$\cdots ? \quad \sqrt{3}$$

---

42 SQUARE ROOT

$$\sqrt{(x+13)^2} = \sqrt{25}$$

$$x + 13 = \pm 5$$
$$-13 \quad -13$$

$$x = -13 \pm 5$$

$$x = \boxed{-18, -8}$$

$$x^- = \sqrt{\tfrac{}{5}}$$

$$x = \pm\sqrt{\tfrac{3}{5}} \approx \boxed{\pm 0.77}$$

46
$$164 = 0.93x^2 + 2.2x + 130$$
$$-164 \qquad\qquad\qquad -164$$
$$0 = 0.93x^2 + 2.2x - 34$$
$$a = .93 \qquad b = 2.2 \quad c = -34$$

$$x = \frac{-2.2 \pm \sqrt{(2.2)^2 - 4(.93)(-34)}}{2(.93)}$$

$$x = \frac{-2.2 \pm \sqrt{131.32}}{1.86} \approx \;\;\cancel{-8.54}, \; 4.98$$

neg. years

$$1990 + 4.98 \Rightarrow \text{about } \boxed{1995}$$

47
$$16 = 0.7x^2 - 4.3x + 5.5$$
$$-16 \qquad\qquad\qquad -16$$
$$0 = 0.7x^2 - 4.3x - 10.5$$
$$a = 0.7 \quad b = -4.3 \quad c = -10.5$$

$$x = \frac{4.3 \pm \sqrt{(-4.3)^2 - 4(0.7)(-10.5)}}{2(0.7)}$$

$$x = \frac{4.3 \pm \sqrt{47.89}}{1.4}$$

$$x \approx 8.01, \; \cancel{-.87}$$

$$1985 + 8.01 \Rightarrow \text{about } \boxed{1993}$$

48 a) $h = -16t^2 + v_0 t + h_0$

$$h = -16t^2 + 45t + 2.5$$

b)
$$5.5 = -16t^2 + 45t + 2.5$$
$$-5.5 \qquad\qquad\qquad -5.5$$
$$0 = -16t^2 + 45t - 3$$
$$a = -16 \quad b = 45 \quad c = -3$$

$$t = \frac{-45 \pm \sqrt{45^2 - 4(-16)(-3)}}{2(-16)}$$

$$t = \frac{-45 \pm \sqrt{1833}}{-32} \approx .07, \; \boxed{2.74s}$$

start   end

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