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$\cancel{\frac{-3 \pm \sqrt{65}}{-4}}$

② $2x^2 + 2x - 1 = 0$

$a = 2 \quad b = 2 \quad c = -1$

$x = \frac{-2 \pm \sqrt{4+8}}{4} = x = \frac{-2 \pm 2\sqrt{3}}{4}$ $\div 2$ $\quad x = \frac{-1 \pm \sqrt{3}}{2}$

$(x-7)^2 + 17 = 21$ Quadratic Formula $\quad (x-7)^2 = 21$ Sq Root Prop $\quad x^2 - 7x + 6 = 0$ Factoring / Zero Product Prop.

☆ Solve Applications Involving Quadratic Models

ex) $h = 139 - 15t - 16t^2$

ex) $0 = 139 - 15t - 16t^2$

$-16t^2 - 15t + 139 = 0$

$t = \frac{-(-15) \pm \sqrt{(-15)^2 - 4(-16)(139)}}{-32} = t = \frac{15 \pm \sqrt{9121}}{-32}$

$t \approx -3.45$ ✗, $t \approx 2.52$ ✓

ex) $h = 2 + 13t - 5t^2$

$9 = 2 + 13t - 5t^2$

$-5t^2 + 13t - 7 = 0$

$a = -5 \quad b = 13 \quad c = -7$

$t = \frac{-13 \pm \sqrt{169 - 4(-5)(-7)}}{2(-5)}$

$t = \frac{-13 \pm \sqrt{29}}{-10}$

$t \approx 0.76$ s, $t \approx 1.84$ seconds

① $h = 235t - 16t^2$

$151 = 235t - 16t^2$

$-16t^2 + 235t - 151 = 0$

$a = -16 \quad b = 235 \quad c = -151$

$t = \frac{-(235) \pm \sqrt{(235)^2 - 4(-16)(-151)}}{-32}$

$t = \frac{-235 \pm \sqrt{55225 - 9604}}{-32}$

$t = \frac{-235 \pm \sqrt{45561}}{-32} \rightarrow t \approx 0.67$ ✓ $\quad t \approx 14.01$ ✓

Seconds

livescribe

~~$\frac{-3 \pm \sqrt{65}}{4}$~~

② $2x^2 + 2x - 1 = 0$

$a=2 \quad b=2 \quad c=-1$

$x = \frac{-2 \pm \sqrt{4+8}}{4} = x = \frac{-2 \pm 2\sqrt{3}}{4}$ (÷2) $\quad x = \frac{-1 \pm \sqrt{3}}{2}$

$(x-7)^2 + 17 = 21$ Quadratic Formula

$(x-7)^2 = 21$ Sq Root Prop.

$x^2 - 7x + 6 = 0$ Factoring/Zero Product Prop.

★ Solve Applications using Quadratic Models

ex) $h = 139 - 15t - 16t^2$

ex) $0 = 139 - 15t - 16t^2$

$-16t^2 - 15t + 139 = 0$

$t = \frac{-(-15) \pm \sqrt{(-15)^2 - 4(-16)(139)}}{-32}$ $t = \frac{15 \pm \sqrt{9121}}{-32}$

$t \approx 3.45$ ✗, $t \approx 2.52$ ✓

ex) $h = 2 + 13t - 5t^2$

$9 = 2 + 13t - 5t^2$

$-5t^2 + 13t - 7 = 0$

$a=-5 \quad b=13 \quad c=-7$

$t = \frac{-13 \pm \sqrt{169 - 4(-5)(-7)}}{2(-5)}$

$t = \frac{-13 \pm \sqrt{29}}{-10}$

$t \approx 0.765$ $t \approx 1.845$ seconds

① $h = 235t - 16t^2$

$151 = 235t - 16t^2$

$-16t^2 + 235t - 151 = 0$

$a=-16 \quad b=235 \quad c=-151$

$t = \frac{-(235) \pm \sqrt{(235)^2 - 4(-16)(-151)}}{-32}$

$t = \frac{-235 \pm \sqrt{55225 - 9664}}{-32}$

$t = \frac{-235 \pm \sqrt{45561}}{-32}$ → $t \approx 0.67$ ✓ $t \approx 14.01$ ✓ seconds

(2) $h = 80 - 4t - 16t^2$

$-16t^2 - 4t + 80 = 0$

$a = -16 \quad b = -4 \quad c = 80$

$x = \frac{4 \pm \sqrt{16 + 4(16)(80)}}{-32}$

$\frac{4 \pm \sqrt{5136}}{-32}$

$t = -2.36$ $t = 2.11$ ✓

seconds