Unit 8: Quadratic equations

(Chapter 8, page 340)
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☐	Standard form $ax^2 + bx + c = 0$	Page 342
☐	Quadratic formula	Page 350
☐	Solve quadratic equation using 3 methods: ---- Example: Solve the same equation using 3 different methods: $x^2 - 6x + 8 = 0$ -- Factoring -- Completing the square -- Formula	

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☐	Properties of solutions of $ax^2 + bx + c = 0$, $a \neq 0$ <u>Discriminant:</u> $\Delta = b^2 - 4ac$ A. $\Delta > 0$: _____ B. $\Delta = 0$: _____ C. $\Delta < 0$: _____ which are conjugate of each other. ---------- ---- Examples	Theorem 8-3
☐	For the equation $ax^2 + bx + c = 0$, $a \neq 0$ -- Sum of solutions is _____ -- Product of solutions is _____	Theorem 8-4
☐	Find a quadratic equation given: -- Sum of solutions is 3, product is $-\frac{1}{4}$. -- The two solutions are $2 + \sqrt{5}$ and $2 - \sqrt{5}$ ---- Examples:	Page 356

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☐	Using quadratic equations: See optimization in Unit 9, maximum minimum problem (aka 'fence')	Page 347
☐	Pythagorean theorem	Page 348
☐	Equations reducible to quadratic form ---- Example: Solve $x - 10\sqrt{x} + 9 = 0$	Page 359
☐	Formulas (see also 'Height of an object problems' in this unit) Solve for r given $V = \pi r^2 h$	page 363

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	Vertical motion (Height of an object problems)	
☐	The general form of equation for vertical motion is: $$h(t) = -16t^2 + v_0 t + h_0$$ where: $h(t)$ - Height at time t, in units of feet v_0 - Starting (initial) vertical velocity, in units of feet-per-second h_0 - Starting (initial) height, in units of feet t - Time, in units of second The time at the maximum height is $$t_{maxHeight} = \frac{v_0}{32}$$ We did many examples in class. See worksheet. Draw here an image to help you remember this.	Page 321

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