Is Algebra 2 hard? The unit map, with the hard units marked

Algebra 2 is not one hard idea; it is many units that arrive fast and all assume Algebra 1 is automatic. The map shows where students actually fall. Mark the two or three rows that are yours; that is the whole problem, and it is smaller than 'bad at Algebra 2'.

Unit	Difficulty	Why it hurts	What fixes it
Functions: transformations, composition, inverses	HARD	f(x) becomes a thing in itself, to shift, stretch, combine and invert; students who still think x is 'the answer' struggle in every later unit	graph every function; say aloud what each change does to the picture
Quadratics and complex numbers	medium	i is unfamiliar; the arithmetic is fiddly	treat i as a letter with one extra rule: $i^2 = -1$
Polynomials and factoring	HARD	factoring must be automatic and now includes cubes, grouping, more than two terms	ten factoring questions a day until quick
Radicals and rational exponents	medium	new rules for roots and fractional powers, easily mixed up	one table of exponent rules, learned cold, used daily
Exponentials and logarithms	HARD	a logarithm is an exponent, and most students never hear that sentence	'log base b of x is the power you raise b to, to get x', said aloud until obvious
Rational expressions	HARD	fractions with letters; every fraction weakness reappears	fraction arithmetic first, then the same steps with letters
Sequences and series	easier	new notation, familiar ideas	write the first five terms of everything
Trigonometric functions	medium-hard	the unit circle as 48 memorised facts	build it from the two special triangles
Probability and statistics	easier	vocabulary more than algebra	two-way tables drawn for every problem

How it compares

Compared with	Harder or easier?
Algebra 1	harder: faster, more topics, Algebra 1 assumed
Geometry	harder for most; easier for students who disliked proofs
Pre-Calculus	similar; Pre-Calculus repeats much of it
College algebra	roughly Algebra 2 again, faster, without the trigonometry
Calculus	calculus has harder ideas but fewer of them; most calculus errors are Algebra 2 errors

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The readiness check, honors or regular, and the plan to pass it well

Ten Algebra 1 skills Algebra 2 uses every day (no calculator, ten minutes)

1. Factor $x^2 - 5x - 14$
2. Factor $4x^2 - 9$
3. Solve $2x^2 + 7x = 4$
4. Simplify $(x^3)^2 \cdot x^{-4}$
5. Write $3/x + 2/x^2$ as one fraction
6. Solve $3(x - 2) = 5x + 8$
7. Slope and y-intercept of $4x - 2y = 6$
8. If $f(x) = x^2 - 3x$, find $f(-2)$
9. Solve $y = 2x - 1$ and $3x + y = 9$
10. Write root 50 in simplest form

Answers

1. $(x - 7)(x + 2)$ 2. $(2x - 3)(2x + 3)$ 3. $x = 1/2$ or $x = -4$ 4. x^2 5. $(3x + 2)/x^2$ 6. $x = -7$ 7. slope 2, intercept -3 8. 10 9. $x = 2, y = 3$ 10. 5 root 2. Nine or ten quickly: ready, and Algebra 2 will be work rather than a wall. Six to eight: a month on the ones you missed, before or alongside the course. Five or fewer: the problem is Algebra 1; fix it first.

Honors or regular?

[ ] Honors: the same topics faster and deeper, often with trigonometry; leads to Pre-Calculus honors and AP Calculus. Take it if Algebra 1 and Geometry came easily

[ ] If they did not: regular Algebra 2 done well. A C in honors is worth less than an A in regular, and regular Algebra 2 then Pre-Calculus still reaches calculus in senior year

The plan to pass it well: tick each week

Habit	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6
Fix Algebra 1 first: factoring, exponent rules, fractions with letters, equations	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Twenty minutes every day, not two hours on Sunday	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
One-page rule sheet per unit, rewritten from memory weekly	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Graph everything: every function in the course has a shape	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Write every step and substitute the answer back	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Get help in the first month a unit goes wrong, not at semester's end	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

My two or three hard rows: _____

The Algebra 1 skills I missed above: _____

The unit the class is on now: _____