Common Core Effects on MATH132/135

Wednesday, August 19, 2015
TC3 Main Campus – Dryden
Sprole Conference Center (Room 204)
10:00am – 2:00pm

The focus of this meeting is to discuss the recommended Common Core Algebra II and Precalculus courses and how they impact TC3's MATH132 and 135 concurrent enrollment courses.

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Changes in Common Core Math

- Trig applications moved out of math curriculum – some teachers may cover it with geometry (but barely), otherwise it is moved into precalculus
- Concern is that precalc used to include a review of trig concepts, but now trig will be significant piece
- Too difficult to cover all trig in precalc as one semester course
- Students entering 4-yr colleges may not have the trig background colleges expect (those entering community colleges will probably be fine due to placement testing)

Some reasons for low math placement test results when students arrive at college (w/o prior college math credit):

- Students have weak fractions skills (even if algebra skills are OK)
- Students are used to calculators

How are MATH132/135 covered in High School?

- Ithaca: A2 course, then yearlong MATH132/135 (most common across schools)
- Newfield: A2 course, MATH132 and MATH200, or MATH135 and calc
- Bradford: A2 course, then MATH135 and stats in one year
- Afton and BG: block period A2 in fall and then MATH132 in spring

- Teachers indicated no interest in teaching Common Core precalc
- Lots of interest in teaching stats at high school (Common Core includes stats in various courses)
- TC3 courses being used to cover what's missing from Core (Rational Expressions and Trig)

Some recommendations from teachers:

- Remove logarithmic and exponential functions from 135 and move to 132
- Leave Polar Coordinates and Matrices out of 135 (can be optional topics)
- Keep Rational Expressions and Complex Numbers (since they are not in Core)
- Shift Chapter 3 Polynomials into MATH135
- Cover Chapters 1, 2, 4, 5, Quadratic Functions in MATH132
- Add systems of equations to 132?
- Consider aligning MATH132 more closely with Common Core A2

TC3 perspective:

- No time currently for matrices in class in 132 (as a 3-credit campus course)
- Scientific calculator on campus, not graphing calculators so students know how to actually do the math
- Could create a 1-credit trig only course → not likely to run in HS according to teachers
- Conic sections is covered in precalculus at other colleges
- OK for school to cover more, not less; OK for school to cover some 135 topics within 132
- If MATH132 is aligned with Common Core A2, this could create overlap with TC3's MATH100, leading us to eliminate MATH100 and bump MATH132 and/or MATH135 up to 4 credits

Below is a summary of the recommended changes and comments provided separately (in writing) by instructors:

MATH 132	MATH 135
Add Conic sections (Homer, UV, Owego); moving ellipses, hyperbolas, parabolas from 135 to 132 also came up in group discussion	Remove Conic sections (Homer)
Add Absolute Value Equations & Inequalities (Newfield)	Take out Chapter 3 (UV)
Keep Rational Expressions (Owego)	Add Ambiguous Case (Newfield)
Add Systems of Equations, 3x3 (Owego)	Add Area Using 1/2absinC (Newfield)
Moving Graphing Properties for Polynomial Functions (Ch. 3.2) and Solving Cubic and 4^{th} Degree Polynomial (Ch. 3.4) from 132 to 135 came up in group discussion	Cover Ch. 2.7, 4, Review of 5, 6, 7, & 10; matrices & polar as optional topics (South Lewis)

Add Exponential & Logarithmic Equations (Owego, South Lewis)	Keep Logs & Exponentials (Homer)
If add logs (Ch. 4), then move Ch. 5 trig to 135 (UV, Owego)	Add Trig (Homer)
Remove Trig (Homer)	Do not add Polar Coordinates (Owego)
Beginning of 132 (Ch. P-2) should be a quick review	Do not do Matrices (Owego)
Keep Ch. 3 & 5 (South Lewis)	Remove Vectors and Dot Product (Newfield)

- Afton, Campbell Savona – They can handle whatever TC3 decides as they teach the same students all topics (and even more) over the year.
- Newark Valley – OK with existing 132 and 135, and will add in matrices. Trig needs more time in MATH132, but she plans to cover some trig topics in A2, thus freeing up time in 132 for more trig.
- Bradford – Wendy only teaches 135 (in one semester; students take Stats other semester and then yearlong Calc if time). To cover everything that is required in 135, missing in Common Core A2, and needed for Calculus, they would need to change to a yearlong 132/135 course. This is possible, but may limit enrollment for Calc I and Stats due to scheduling (they may then switch to one semester Calc I so that Stats can still be offered in opposite semester).
- Unadilla Valley (UV) – Steve prefers if MATH132 is aligned with Common Core A2.
- South Lewis – Jana suggests that TC3 keep the courses the same, but allow districts to use their own order and timeline [VCZ note: this is consistent with how TC3 approaches the courses now when both are taught within one year at a school]. Jana also recommends that additional topics be considered optional topics (as time allows) to provide flexibility for instructors.

Proposed Changes

Math 100

Remove	**Keep**	**Add**
Order of Operations	Linear Equations	More with Function Notation
Simplifying Algebraic Expressions	Formulas	Quadratic Formula
Scientific Notation	Absolute Value Equations	
Frames (I hear most teachers do not put it on their tests anyway)	Word Problems Age Problems	
	Inequalities	
	Graphing & Slope	
	Equations of Lines	
	Parallel & Perpendicular	
	Linear Inequalities in 2 variables	
	Exponents	
	Polynomials	
	Polynomial Division	
	Factoring GCF & Grouping Special Products Trinomials Difference of Squares Difference of Cubes Sum of Cubes	
	Solve by Factoring	
	Rectangles	
	Rational Expressions Multiply & Divide Add & Subtract Complex Solve Rational Equations	
	Compound Inequalities	
	Absolute Value Inequalities	
	Value/Interest/Distance/Mixture Word Problems	
	Functions and Algebra of Functions	

Math 132

Remove	Keep	Add
Polynomials (add/subtract/mult)	Radicals (P.3)	Logarithmic Equations
Rational Expressions	Review Factoring (P.5)	Exponential Equations
Add/Subtract/Multiply/Divide using function notation	Completing Square(1.5) Quadratic Formula	Properties of logarithmic functions
	Complex Numbers(1.4)	Growth/Decay Problems
	Application Problems(1.3)	
	Solving Other types of Equations(1.6)	Inverses (2.7)
	Definition of a Function (2.1, 2.2, 2.6) Review (add/subt/mult/divide)	
	Transformation of Graphs (2.5)	
	Circles (2.8)	
	Graphing Quadratic Functions(3.1)	
	Graphing Properties for Polynomial Functions (3.2)	
	Dividing Polynomials (3.3)	
	Solving Cubic and 4^{th} degree polynomial (3.4)	
	Graphing Rational Expressions(3.5)	
	Inequalities (Polynomial & Rational) (3.6)	
	Radians/Degrees/Coterminal Angles (5.1)	
	Introduce the 6 trig functions (5.2)	
	Reference Angles (5.3)	
	Unit Circle (5.4)	
	Introduce the graphs of all 6 trig functions (5.5-5.6)	

Math 135

Remove	Keep	Add
Logarithmic Equations	Review Unit Circle, Reference Angles, and Coterminal Angles	Polar Coordinates
Exponential Equations	Graphs of the 6 trig functions	Graphs of Polar Equations
Properties of Logarithmic Functions	Inverse Trig Functions	Complex Numbers in Polar Form/ DeMoivre's Theorem
Growth/Decay	Applications of Trig Functions	Systems of Equations for 2 Variables
Most of Chapter 5	Verifying Trig Identities	Systems of Equations for 3 Variables
	Sum & Difference Formulas	Partial Fractions
	Double Angle/Half Angle Formulas	Matrix Solutions to Linear Systems
	Product-to-Sum and Sum-to-Product Formulas	Matrix Operations and Their Applications
	Solving Trig Equations	Determinants and Cramer's Rule
	Law of Sines	
	Law of Cosines	
	Vectors	
	Dot Product	
	Ellipses	
	Hyperbolas	
	Parabolas	