Pre-Calculus, Fall 2018, MAT K186, Monday and Wednesday from 6:00 – 7:40

Professor Tony Baker   Room D210

REQUIRED MATERIAL:

The text is Precalculus, 1st Edition. Coburn & Herdlick. McGraw Hill 2012. ISBN #9780073519531

You can purchase a hardcover or paperback book with ALEKS 360 access code or just the electronic access kit (which includes ebook). You are required to purchase the access code for ALEKS 360.

Options for your book:

1. Combo package; Includes copy of text, ALEX 360 (includes ebook). This gives access for a full year to ALEKS.
2. ALEKS 360 52 wk access code (includes ebook). This gives access for a full year to ALEKS.
3. ALEKS 360 18 wk access code (includes ebook). This gives access for Fall term only to ALEKS.

CALCULATORS: Graphing calculators will be needed for many homework problems and it is required that you bring one to every class. Cell phones may not be used as calculators.

COMPUTERS: In this course, students will use an online program titled ALEKS 360. This program can be used on any computer or tablet with internet access. An access code for ALEKS 360 is required. If you did not purchase a book which has an access code bundled with it, you will have to purchase an access code separately. One may be purchased at the TRCC bookstore or online at www.aleks.com.

What is ALEKS?

Assessment and Learning in Knowledge Spaces is a Web-based, artificially intelligent assessment and learning system. ALEKS uses adaptive questioning to quickly and accurately determine exactly what a student knows and doesn't know in a course. ALEKS then instructs the student on the topics they are most ready to learn. As a student works through a course, ALEKS periodically reassesses the student to ensure that topics learned are also retained. ALEKS courses are very complete in their topic coverage. A student who shows a high level of mastery of an ALEKS course will be successful in the actual course they are taking.

Course Code: R9WV6-NX6DV

Attendance: It is very important that you attend ALL classes. Your attendance in the classroom, participation in classroom work /projects and preparation for each class is required and is essential to your success in the course.

Support Services: Tutorial services. Meeting with me for an extra help.

Office Hours: M, W 5:00pm to 6:00pm (by appointment only) Room D210

E-mail Padrick77@gmail.com

Class Cancellation: In case of inclement weather, check the college website for class cancellations or call 860-215- 9000 for recorded message on the college phone.

Plagiarism and Academic Honesty:

At TRCC, we expect the highest standards of academic honesty. The Board of Trustees' Proscribed Conduct Policy prohibits cheating on examinations, unauthorized collaboration on assignments, unauthorized access to examinations or course materials, plagiarism.

Alert System: MyCommNet Alert is a system that sends text messages and emails to anyone signed up in the event of a campus emergency. Additionally, TRCC sends messages when the college is delayed or closed due to weather. All students are encouraged to sign up for MyCommNet Alert. A tutorial is available on the Educational Technology and Distance Learning Students page of the web site(see the link below).

http://www.trcc.commnet.edu/div_it/educationaltechnology/Tutorials/myCommNetAlert/MIR3.html

Disabilities : If you have a disability that may affect your progress in this course, please meet with a Disability Service Provider (DSP) as soon as possible. Please note that accommodations cannot be provided until you provide written authorization from a DSP.

Grading Policy

All grades will be done in the ALEKS program and you can see your grade at any time by going to your reports.

- Time goals   14 weeks/ 5 hours per week   10% total
  - Time goals are automatically 100% if all objectives for the week are completed
- Objective Goals   14 Objectives   30% total
  - Based on your mastery of the topics after the objective knowledge check
- Tests   60% total
  - Four Tests   10% each
  - Final Exam   20%

Due Dates

|	
Time Goal Due Dates	1 - Sep 9, 2018
	2 - Sep 16, 2018
	3 - Sep 23, 2018
	4 - Sep 30, 2018
	5 - Oct 7, 2018
	6 - Oct 14, 2018
	7 - Oct 21, 2018
	8 - Oct 28, 2018
	9 - Nov 4, 2018
	10 - Nov 11, 2018
	11 - Nov 18, 2018
	12 - Nov 25, 2018
	13 - Dec 2, 2018
	14 - Dec 9, 2018
Objectives Due Dates	Week 1 - Sep 9, 2018
	Week 2 - Sep 16, 2018
	Week 3 - Sep 23, 2018
	Week 4 - Sep 30, 2018
	Week 5 - Oct 7, 2018
	Week 6 - Oct 14, 2018
	Week 7 - Oct 21, 2018
	Week 8 - Oct 28, 2018
	Week 9 - Nov 4, 2018
	Week 10 - Nov 11, 2018
	Week 11 - Nov 18, 2018
	Week 12 - Dec 2, 2018
	Week 13 - Dec 5, 2018
Tests	Chapter 1-5 Test - Oct 3, 2018
	Chapter 6 Test - Oct 22, 2018
	Chapter 7-8 Test - Nov 14, 2018
	Chapter 10-11 Test - Dec 5, 2018
	Final Exam - Dec 12, 2018

ALEKS® Course Syllabus

Course Name:	PreCalc Fall 2018	Course Code:	R9WV6-NX6DV
ALEKS Course:	PreCalculus	Instructor:	Baker
Course Dates:	Begin: 08/27/2018 End: 12/21/2018	Course Content:	264 topics / 137 accessible topics
Textbook:	Coburn/Herdlick: Precalculus - Graphs and Models, 1st Ed. (McGraw-Hill) - ALEKS 360		

Dates	Objective
08/27/2018 - 09/09/2018	1. Week 1 (27 topics)
09/10/2018 - 09/16/2018	2. Week 2 (26 topics)
09/17/2018 - 09/23/2018	3. Week 3 (23 topics)
09/24/2018 - 09/30/2018	4. Week 4 (28 topics)
10/01/2018 - 10/07/2018	5. Week 5 (11 topics)
10/08/2018 - 10/14/2018	6. Week 6 (22 topics)
10/15/2018 - 10/21/2018	7. Week 7 (30 topics)
10/22/2018 - 10/28/2018	8. Week 8 (7 topics)
10/29/2018 - 11/04/2018	9. Week 9 (20 topics)
11/04/2018 - 11/11/2018	10. Week 10 (14 topics)
11/12/2018 - 11/18/2018	11. Week 11 (13 topics)
11/19/2018 - 12/02/2018	12. Week 12 (42 topics)
12/03/2018 - 12/05/2018	13. Week 13 (9 topics)

⟨⁊⟩ Accessible Topic - Topics accessible to visually impaired students using a screen reader.

Week 1   (27 topics, due on 09/09/2018)

- Distance between two points in the plane: Exact answers ⟨⁊⟩
- Midpoint of a line segment in the plane ⟨⁊⟩
- Identifying solutions to a linear equation in two variables ⟨⁊⟩
- Graphing a line given its equation in standard form
- Graphing a vertical or horizontal line
- Finding x- and y-intercepts given the graph of a line on a grid
- Finding x- and y-intercepts of a line given the equation: Basic ⟨⁊⟩
- Finding x- and y-intercepts of a line given the equation: Advanced ⟨⁊⟩
- Graphing a parabola of the form $y = ax^2$
- Graphing a parabola of the form $y = ax^2 + c$
- Writing the equations of vertical and horizontal lines through a given point ⟨⁊⟩
- Identifying functions from relations
- Vertical line test
- Evaluating a rational function: Problem type 1 ⟨⁊⟩
- Evaluating a rational function: Problem type 2 ⟨⁊⟩
- Table for a square root function ⟨⁊⟩
- Evaluating functions: Absolute value, rational, radical ⟨⁊⟩
- Domain and range from ordered pairs ⟨⁊⟩

- Domain of a rational function: Excluded values
- Domain of a rational function: Interval notation
- Domain of a square root function: Basic
- Domain of a square root function: Advanced
- Finding the domain of a fractional function involving radicals
- Finding an output of a function from its graph
- Finding inputs and outputs of a function from its graph
- Domain and range from the graph of a discrete relation
- Domain and range from the graph of a piecewise function

Week 2 (26 topics, due on 09/16/2018)

- Finding intercepts of a nonlinear function given its graph
- Evaluating a piecewise-defined function
- Domain and range from the graph of a continuous function
- Finding where a function is increasing, decreasing, or constant given the graph
- Finding where a function is increasing, decreasing, or constant given the graph: Interval notation
- Finding values and intervals where the graph of a function is zero, positive, or negative
- Graphing a function of the form $f(x) = ax^2$
- Graphing a function of the form $f(x) = ax^2 + c$
- Graphing a parabola of the form $y = (x-h)^2 + k$
- Graphing a square root function: Problem type 1
- Graphing a square root function: Problem type 2
- Matching parent graphs with their equations
- Graphing a piecewise-defined function: Problem type 1
- Graphing a piecewise-defined function: Problem type 2
- Graphing a piecewise-defined function: Problem type 3
- Translating the graph of a parabola: Two steps
- How the leading coefficient affects the shape of a parabola
- Translating the graph of an absolute value function: One step
- Translating the graph of an absolute value function: Two steps
- How the leading coefficient affects the graph of an absolute value function
- Translating the graph of a function: One step
- Transforming the graph of a function by reflecting over an axis
- Transforming the graph of a function using more than one transformation
- Writing an equation for a function after a vertical and horizontal translation
- Finding the vertex, intercepts, and axis of symmetry from the graph of a parabola
- Domain and range from the graph of a quadratic function

Week 3 (23 topics, due on 09/23/2018)

- Finding the roots of a quadratic equation with leading coefficient 1
- Finding the roots of a quadratic equation with leading coefficient greater than 1
- Applying the quadratic formula: Exact answers
- Applying the quadratic formula: Decimal answers
- Solving a quadratic equation with complex roots
- Finding a difference quotient for a linear or quadratic function
- Finding a difference quotient for a rational function
- Finding the average rate of change of a function
- Finding the average rate of change of a function given its graph
- Sum, difference, and product of two functions
- Quotient of two functions: Basic
- Combining functions: Advanced
- Introduction to the composition of two functions
- Composition of two functions: Basic
- Composition of a function with itself
- Expressing a function as a composition of two functions
- Composition of two functions: Domain and range
- Composition of two rational functions
- Finding the vertex, intercepts, and axis of symmetry from the graph of a parabola
- Graphing a parabola of the form $y = x^2 + bx + c$
- Graphing a parabola of the form $y = ax^2 + bx + c$: Integer coefficients
- Finding the x-intercept(s) and the vertex of a parabola
- Finding the maximum or minimum of a quadratic function

Week 4 (28 topics, due on 09/30/2018)

- Horizontal line test

- Determining whether two functions are inverses of each other [?]
- Inverse functions: Linear, discrete [?]
- Inverse functions: Quadratic, square root [?]
- Inverse functions: Rational [?]
- Table for an exponential function [?]
- Graphing an exponential function and its asymptote: $f(x)=b^x$
- Graphing an exponential function and its asymptote: $f(x) = a(b)^x$
- Finding domain and range from the graph of an exponential function
- The graph, domain, and range of an exponential function
- Transforming the graph of a natural exponential function
- Graphing an exponential function and its asymptote: $f(x) = a(e)^{x-b} + c$
- Evaluating an exponential function that models a real-world situation [?]
- Finding a final amount in a word problem on exponential growth or decay [?]
- Converting between logarithmic and exponential equations [?]
- Converting between natural logarithmic and exponential equations [?]
- Evaluating logarithmic expressions [?]
- Solving an equation of the form $\log_b a = c$ [?]
- Translating the graph of a logarithmic function
- Graphing a logarithmic function: Basic
- The graph, domain, and range of a logarithmic function
- Basic properties of logarithms [?]
- Expanding a logarithmic expression: Problem type 1 [?]
- Writing an expression as a single logarithm [?]
- Change of base for logarithms: Problem type 1 [?]
- Solving a multi-step equation involving a single logarithm: Problem type 1 [?]
- Solving an exponential equation by finding common bases: Linear exponents [?]
- Solving an exponential equation by using natural logarithms: Decimal answers [?]

Week 5   (11 topics, due on 10/07/2018)

- Evaluating an exponential function with base e that models a real-world situation [?]
- Finding a final amount in a word problem on exponential growth or decay [?]
- Writing an equation that models exponential growth or decay [?]
- Writing an exponential function rule given a table of ordered pairs [?]
- Solving a multi-step equation involving natural logarithms [?]
- Solving an equation involving logarithms on both sides: Problem type 1 [?]
- Solving an equation involving logarithms on both sides: Problem type 2 [?]
- Finding the time given an exponential function with base e that models a real-world situation [?]
- Finding the rate or time in a word problem on continuous exponential growth or decay [?]
- Finding half-life or doubling time [?]
- Writing and evaluating a function modeling continuous exponential growth or decay given doubling time or half-life [?]

Week 6   (22 topics, due on 10/14/2018)

- Converting degrees-minutes-seconds to decimal degrees
- Converting a decimal degree to degrees-minutes-seconds
- Converting between degree and radian measure: Problem type 1 [?]
- Converting between degree and radian measure: Problem type 2
- Sketching an angle in standard position
- Coterminal angles [?]
- Arc length and central angle measure [?]
- Area of a sector of a circle [?]
- Finding coordinates on the unit circle for special angles [?]
- Finding a point on the unit circle given one coordinate
- Trigonometric functions and special angles: Problem type 1 [?]
- Trigonometric functions and special angles: Problem type 2 [?]
- Trigonometric functions and special angles: Problem type 3
- Reference angles: Problem type 1 [?]
- Reference angles: Problem type 2
- Sketching the graph of $y= a \sin(x)$ or $y= a \cos(x)$
- Sketching the graph of $y= \sin(bx)$ or $y= \cos(bx)$
- Sketching the graph of $y= a \sin(bx)$ or $y= a \cos(bx)$
- Amplitude and period of sine and cosine functions [?]
- Writing the equation of a sine or cosine function given its graph: Problem type 1
- Domains and ranges of trigonometric functions
- Sketching the graph of a tangent or cotangent function: Problem type 2

Week 7   (30 topics, due on 10/21/2018)

- Coterminal angles [?]
- Trigonometric functions and special angles: Problem type 1 [?]
- Trigonometric functions and special angles: Problem type 2 [?]
- Trigonometric functions and special angles: Problem type 3
- Using a calculator to approximate sine, cosine, and tangent values [?]
- Special right triangles: Exact answers [?]
- Sine, cosine, and tangent ratios: Numbers for side lengths [?]
- Sine, cosine, and tangent ratios: Variables for side lengths [?]
- Using the Pythagorean Theorem to find a trigonometric ratio [?]
- Finding trigonometric ratios given a right triangle [?]
- Understanding trigonometric ratios through similar right triangles
- Relationship between the sines and cosines of complementary angles
- Using a trigonometric ratio to find a side length in a right triangle [?]
- Using trigonometry to find a length in a word problem with one right triangle [?]
- Using a trigonometric ratio to find an angle measure in a right triangle [?]
- Using trigonometry to find angles of elevation or depression in a word problem
- Solving a right triangle [?]
- Using trigonometry to find a length in a word problem with two right triangles
- Reference angles: Problem type 1 [?]
- Reference angles: Problem type 2
- Determining the location of a terminal point given the signs of trigonometric values [?]
- Finding values of trigonometric functions given information about an angle: Problem type 1 [?]
- Sketching the graph of $y = \sin(x) + d$ or $y = \cos(x) + d$
- Sketching the graph of $y = \sin(x+c)$ or $y = \cos(x+c)$
- Sketching the graph of $y = a\sin(x+c)$ or $y = a\cos(x+c)$
- Sketching the graph of $y = a\sin(bx+c)$ or $y = a\cos(bx+c)$
- Sketching the graph of $y = a\sin(bx) + d$ or $y = a\cos(bx) + d$
- Amplitude, period, and phase shift of sine and cosine functions [?]
- Writing the equation of a sine or cosine function given its graph: Problem type 2
- Using a calculator to approximate inverse trigonometric values [?]

Week 8   (7 topics, due on 10/28/2018)

- Finding values of trigonometric functions given information about an angle: Problem type 2 [?]
- Finding values of trigonometric functions given information about an angle: Problem type 3 [?]
- Simplifying trigonometric expressions [?]
- Verifying a trigonometric identity
- Proving trigonometric identities: Problem type 1
- Proving trigonometric identities: Problem type 2
- Proving trigonometric identities: Problem type 3

Week 9   (20 topics, due on 11/04/2018)

- Values of inverse trigonometric functions [?]
- Composition of a trigonometric function with its inverse trigonometric function: Problem type 1 [?]
- Composition of a trigonometric function with the inverse of another trigonometric function: Problem type 1
- Composition of a trigonometric function with the inverse of another trigonometric function: Problem type 2
- Composition of trigonometric functions with variable expressions as inputs: Problem type 1 [?]
- Composition of trigonometric functions with variable expressions as inputs: Problem type 2 [?]
- Sum and difference identities: Problem type 1 [?]
- Sum and difference identities: Problem type 2 [?]
- Proving trigonometric identities using sum and difference properties: Problem type 1
- Proving trigonometric identities using sum and difference properties: Problem type 2
- Double-angle identities: Problem type 1 [?]
- Half-angle identities: Problem type 1 [?]
- Finding solutions in an interval for a basic equation involving sine or cosine [?]
- Finding solutions in an interval for a basic tangent, cotangent, secant, or cosecant equation [?]
- Solving a basic trigonometric equation involving sine or cosine [?]
- Solving a basic trigonometric equation involving tangent, cotangent, secant, or cosecant [?]
- Finding solutions in an interval for a trigonometric equation with a squared function: Problem type 1 [?]
- Solving a trigonometric equation involving a squared function: Problem type 1
- Solving a trigonometric equation involving an angle multiplied by a constant
- Finding solutions in an interval for a trigonometric equation with an angle multiplied by a constant [?]

Week 10   (14 topics, due on 11/11/2018)

- Finding values of trigonometric functions given information about an angle: Problem type 4
- Composition of a trigonometric function with its inverse trigonometric function: Problem type 2
- Finding solutions in an interval for a trigonometric equation in factored form [?]

- Finding solutions in an interval for a trigonometric equation with a squared function: Problem type 2 [?]
- Finding solutions in an interval for a trigonometric equation using Pythagorean identities: Problem type 1 [?]
- Solving a trigonometric equation involving more than one function
- Finding solutions in an interval for an equation with sine and cosine using sum and difference identities
- Solving a triangle with the law of sines: Problem type 1 [?]
- Solving a triangle with the law of sines: Problem type 2
- Solving a word problem using the law of sines
- Solving a triangle with the law of cosines [?]
- Solving a word problem using the law of cosines
- Using trigonometry to find the area of a right triangle
- Finding the area of a triangle using trigonometry

Week 11   (13 topics, due on 11/18/2018)

- Solving a system of linear equations using substitution [?]
- Solving a system of linear equations using elimination with addition [?]
- Solving a system of linear equations using elimination with multiplication and addition [?]
- Plotting points in polar coordinates
- Converting rectangular coordinates to polar coordinates: Special angles
- Plotting complex numbers
- Writing a complex number in standard form given its trigonometric form
- Writing a complex number in trigonometric form: Special angles
- Multiplying and dividing complex numbers in trigonometric form [?]
- De Moivre's Theorem: Answers in trigonometric form [?]
- De Moivre's Theorem: Answers in standard form
- Finding the nth roots of a number: Problem type 1
- Finding the nth roots of a number: Problem type 2

Week 12   (42 topics, due on 12/02/2018)

- Identifying the center and radius to graph a circle given its equation in standard form
- Identifying the center and radius to graph a circle given its equation in general form: Basic
- Writing the equation of a circle centered at the origin given its radius or a point on the circle [?]
- Writing an equation of a circle given its center and a point on the circle [?]
- Writing an equation of a circle given the endpoints of a diameter [?]
- Range of a quadratic function [?]
- Graphically solving a system of linear and quadratic equations
- Solving a system of linear and quadratic equations [?]
- Solving a system of nonlinear equations: Problem type 1 [?]
- Solving a system of nonlinear equations: Problem type 2 [?]
- Graphing a parabola of the form $y^2 = ax$ or $x^2 = ay$
- Graphing a parabola of the form $ay^2 + by + cx + d = 0$ or $ax^2 + bx + cy + d = 0$
- Writing an equation of a parabola given the vertex and the focus
- Writing an equation of a parabola given the focus and the directrix
- Finding the focus of a parabola of the form $ay^2 + by + cx + d = 0$ or $ax^2 + bx + cy + d = 0$
- Writing an equation of a parabola given its graph
- Graphing an ellipse given its equation in standard form
- Graphing an ellipse centered at the origin: $Ax^2 + By^2 = C$
- Graphing an ellipse given its equation in general form
- Finding the center, vertices, and foci of an ellipse
- Finding the foci of an ellipse given its equation in general form
- Writing an equation of an ellipse given the center, an endpoint of an axis, and the length of the other axis
- Writing an equation of an ellipse given the foci and the major axis length
- Graphing a hyperbola given its equation in standard form
- Graphing a hyperbola centered at the origin: $Ax^2 + By^2 = C$
- Graphing a hyperbola given its equation in general form
- Finding the center, vertices, foci, and asymptotes of a hyperbola
- Finding the foci of a hyperbola given its equation in general form
- Writing an equation of a hyperbola given the foci and the vertices
- Classifying conics given their equations
- Finding the first terms of an arithmetic sequence using an explicit rule [?]
- Finding the first terms of a geometric sequence using an explicit rule [?]
- Finding the first terms of a sequence using an explicit rule with multiple occurrences of n [?]
- Finding the next terms of an arithmetic sequence with integers [?]
- Finding the first terms of a sequence using a recursive rule [?]
- Identifying arithmetic sequences and finding the common difference [?]
- Finding a specified term of an arithmetic sequence given the first terms [?]
- Finding a specified term of an arithmetic sequence given the common difference and first term [?]

- Finding a specified term of an arithmetic sequence given two terms of the sequence [→]
- Writing an explicit rule for an arithmetic sequence [→]
- Sum of the first n terms of an arithmetic sequence [→]
- Factorial expressions [→]

Week 13 (9 topics, due on 12/05/2018)

- Finding the next terms of a geometric sequence with signed numbers [→]
- Identifying arithmetic and geometric sequences [→]
- Identifying geometric sequences and finding the common ratio
- Finding a specified term of a geometric sequence given the first terms [→]
- Finding a specified term of a geometric sequence given the common ratio and first term [→]
- Finding a specified term of a geometric sequence given two terms of the sequence
- Arithmetic and geometric sequences: Identifying and writing an explicit rule
- Sum of the first n terms of a geometric sequence [→]
- Sum of an infinite geometric series