Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2017-2018 Trigonometry Midterm Review 1 10-3-17 Hour 1 2 3 4 5 6 7

**Goal: Add and subtract expressions involving fractions**

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| State the ANSWER in EXACT RADIANS | State the ANSWER in EXACT RADIANS | State the ANSWER in EXACT RADIANS |
| State the ANSWER in EXACT RADIANS | State the ANSWER in EXACT RADIANS | State the ANSWER in EXACT RADIANS |

**Goal: Multiply and divide expressions involving fractions**

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**Goal: Graphing Rational Functions: State the parts of each of the rational functions and sketch and label related graphs**

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| 1. Y intercept 2. X intercept(s) 3. Vertical asymptote(s) 4. Horizontal asymptote 5. Slant Asymptote if possible 6. Hole if possible | 1. Y intercept 2. X intercept(s) 3. Vertical asymptote(s) 4. Horizontal asymptote 5. Slant Asymptote if possible 6. Hole if possible | 1. Y intercept 2. X intercept(s) 3. Vertical asymptote(s) 4. Horizontal asymptote 5. Slant Asymptote if possible 6. Hole if possible | 1. Y intercept 2. X intercept(s) 3. Vertical asymptote(s) 4. Horizontal asymptote 5. Slant Asymptote if possible 6. Hole if possible |

**Goal: Determine the coterminal angles related to a given angle in degrees or radians**

**IF YOU ARE GIVEN RADIANS YOU ARE EXPECTED TO ANSWER IN RADIANS**

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| 1. Smallest Positive Coterminal Angle 2. Negative Coterminal Angle closest to 0 3. ALL coterminal angles | 1. Smallest Positive Coterminal Angle 2. Negative Coterminal Angle closest to 0 3. ALL coterminal angles | 1. Smallest Positive Coterminal Angle 2. Negative Coterminal Angle closest to 0 3. ALL coterminal angles | 1. Smallest Positive Coterminal Angle 2. Negative Coterminal Angle closest to 0 3. ALL coterminal angles |

**Goal: Sketch angles and determine the number of rotations**

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| 1. Number of Rotations 2. Sketch | 1. Number of Rotations 2. Sketch | 1. Number of Rotations 2. Sketch | 1. Number of Rotations 2. Sketch |

**Goal: Determine the exact and the approximate measure of the reference angle and the angle formed by a point in the coordinate plane and the x axis.**

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| A (-7, 24) | | | | | | B (0,6) | | | | | | C (5,-7) | | | | | |
| 1. Classify the LARGEST related angle | | | | | | 1. Classify the LARGEST related angle | | | | | | 1. Classify the LARGEST related angle | | | | | |
| Q1 | Q2 | Q3 | | Q4 | On axes | Q1 | Q2 | Q3 | | Q4 | On axes | Q1 | Q2 | Q3 | | Q4 | On axes |
| 1. Exact reference angle 2. Exact angle stated with a positive angle 3. Negative Coterminal angle closest to 0 | | | 1. Approximate reference angle 2. Approximate angle stated with a positive angle 3. All Coterminal Angles (must state the variable restriction) | | | 1. Exact reference angle 2. Exact angle stated with a positive angle 3. Negative Coterminal angle closest to 0 | | | 1. Approximate reference angle 2. Approximate angle stated with a positive angle 3. All Coterminal Angles (must state the variable restriction) | | | 1. Exact reference angle 2. Exact angle stated with a positive angle 3. Negative Coterminal angle closest to 0 | | | 1. Approximate reference angle 2. Approximate angle stated with a positive angle 3. All Coterminal Angles (must state the variable restriction) | | |

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| D (-8, -6) | | | | | | E (-6,0) | | | | | | F (0,-7) | | | | | |
| 1. Classify the LARGEST related angle | | | | | | 1. Classify the LARGEST related angle | | | | | | 1. Classify the LARGEST related angle | | | | | |
| Q1 | Q2 | Q3 | | Q4 | On axes | Q1 | Q2 | Q3 | | Q4 | On axes | Q1 | Q2 | Q3 | | Q4 | On axes |
| 1. Exact reference angle 2. Exact angle stated with a positive angle 3. Negative Coterminal angle closest to 0 | | | 1. Approximate reference angle 2. Approximate angle stated with a positive angle 3. All Coterminal Angles (must state the variable restriction) | | | 1. Exact reference angle 2. Exact angle stated with a positive angle 3. Negative Coterminal angle closest to 0 | | | 1. Approximate reference angle 2. Approximate angle stated with a positive angle 3. All Coterminal Angles (must state the variable restriction) | | | 1. Exact reference angle 2. Exact angle stated with a positive angle 3. Negative Coterminal angle closest to 0 | | | 1. Approximate reference angle 2. Approximate angle stated with a positive angle 3. All Coterminal Angles (must state the variable restriction) | | |

**Goal: Determine the exact measure of the SPECIAL reference angle and the SPECIAL angle formed by a point in the coordinate plane and the x axis.**

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| G | | | | | | | | | | | H | | | | | | | | | | | I (0,-1) | | | | | | | | | | |
| 1. Circle the most appropriate | | | | | | | | | | | 1. Circle the most appropriate | | | | | | | | | | | 1. Circle the most appropriate | | | | | | | | | | |
| 30/60/90 | | | 45/45/90 | | | | | Quadrantal angle | | | 30/60/90 | | | 45/45/90 | | | | | Quadrantal angle | | | 30/60/90 | | | 45/45/90 | | | | | Quadrantal angle | | |
| 1. Classify the LARGEST related angle by quadrant or presence on axes | | | | | | | | | | | 1. Classify the LARGEST related angle by quadrant or presence on axes | | | | | | | | | | | 1. Classify the LARGEST related angle by quadrant or presence on axes | | | | | | | | | | |
| Q1 | Q2 | | | Q3 | | Q4 | | | On axes | | Q1 | Q2 | | | Q3 | | Q4 | | | On axes | | Q1 | Q2 | | | Q3 | | Q4 | | | On axes | |
| 1. Circle the angle that is related to given point | | | | | | | | | | | 1. Circle the angle that is related to given point | | | | | | | | | | | 1. Circle the angle that is related to given point | | | | | | | | | | |
| 30° | 120° | | | 210° | | 300° | | | 0° | | 30° | 120° | | | 210° | | 300° | | | 0° | | 30° | 120° | | | 210° | | 300° | | | 0° | |
| 45° | 135° | | | 225° | | 315° | | | 90° | | 45° | 135° | | | 225° | | 315° | | | 90° | | 45° | 135° | | | 225° | | 315° | | | 90° | |
| 60° | 150° | | | 240° | | 330° | | | 180° | | 60° | 150° | | | 240° | | 330° | | | 180° | | 60° | 150° | | | 240° | | 330° | | | 180° | |
| 270° | | 270° | | 270° | |
| 1. Circle the angle that is related to given point in radians | | | | | | | | | | | 1. Circle the angle that is related to given point in radians | | | | | | | | | | | 1. Circle the angle that is related to given point in radians | | | | | | | | | | |
|  | |  | | |  | |  | | | 0 |  | |  | | |  | |  | | | 0 |  | |  | | |  | |  | | | 0 |
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| J | | | | | | | | | | | K | | | | | | | | | | | L (1,0) | | | | | | | | | | |
| 1. Circle the most appropriate | | | | | | | | | | | 1. Circle the most appropriate | | | | | | | | | | | 1. Circle the most appropriate | | | | | | | | | | |
| 30/60/90 | | | 45/45/90 | | | | | Quadrantal angle | | | 30/60/90 | | | 45/45/90 | | | | | Quadrantal angle | | | 30/60/90 | | | 45/45/90 | | | | | Quadrantal angle | | |
| 1. Classify the LARGEST related angle by quadrant or presence on axes | | | | | | | | | | | 1. Classify the LARGEST related angle by quadrant or presence on axes | | | | | | | | | | | 1. Classify the LARGEST related angle by quadrant or presence on axes | | | | | | | | | | |
| Q1 | Q2 | | | Q3 | | Q4 | | | On axes | | Q1 | Q2 | | | Q3 | | Q4 | | | On axes | | Q1 | Q2 | | | Q3 | | Q4 | | | On axes | |
| 1. Circle the angle that is related to given point | | | | | | | | | | | 1. Circle the angle that is related to given point | | | | | | | | | | | 1. Circle the angle that is related to given point | | | | | | | | | | |
| 30° | 120° | | | 210° | | 300° | | | 0° | | 30° | 120° | | | 210° | | 300° | | | 0° | | 30° | 120° | | | 210° | | 300° | | | 0° | |
| 45° | 135° | | | 225° | | 315° | | | 90° | | 45° | 135° | | | 225° | | 315° | | | 90° | | 45° | 135° | | | 225° | | 315° | | | 90° | |
| 60° | 150° | | | 240° | | 330° | | | 180° | | 60° | 150° | | | 240° | | 330° | | | 180° | | 60° | 150° | | | 240° | | 330° | | | 180° | |
| 270° | | 270° | | 270° | |
| 1. Circle the angle that is related to given point in radians | | | | | | | | | | | 1. Circle the angle that is related to given point in radians | | | | | | | | | | | 1. Circle the angle that is related to given point in radians | | | | | | | | | | |
|  | |  | | |  | |  | | | 0 |  | |  | | |  | |  | | | 0 |  | |  | | |  | |  | | | 0 |
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**Goal: Use the given trigonometric ratio and its restriction to state desired trigonometric ratios based on given and restriction. Don’t Forget “All Students Take Calculus”**

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| 1. State cos M 2. State tan M 3. Find M in degrees | 1. State sin N 2. State tan N 3. Find N in degrees | 1. State sin P 2. State cos P 3. Find P in degrees |

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| --- | --- | --- |
|  |  |  |
| 1. State cos Q 2. State tan Q 3. Find Q in radians | 1. State sin R 2. State tan R 3. Find R in radians | 1. State sin S 2. State cos S 3. Find S in radians |

**Goal: Graph any angle regardless of size or method of describing angle**

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| --- | --- | --- |
| 1. Plot 11° | 1. Plot 11 radians | 1. Plot 11π radians |
|  |  |  |
| 1. Plot -123° | 1. Plot -12.3 radians | 1. Plot  radians |
|  |  |  |

**Goal: Know all of degree and radians related to SPECIAL angle measurements**

1. **Complete table**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Degree | 0° | 30° | 45° | 60° | 90° | 120° | 135° | 150° | 180° |
| Exact Radian |  |  |  |  |  |  |  |  |  |
| Degree | 180° | 210° | 225° | 240° | 270° | 300° | 315° | 330° | 360° |
| Exact  Radian |  |  |  |  |  |  |  |  |  |

**Goal: Know all of trigonometric ratios related to SPECIAL angle measurements**

1. **Complete Table**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Degree | 0° | 30° | 45° | 60° | 90° | 120° | 135° | 150° | 180° |
| Exact Radian |  |  |  |  |  |  |  |  |  |
| Sin |  |  |  |  |  |  |  |  |  |
| Cos |  |  |  |  |  |  |  |  |  |
| Tan |  |  |  |  |  |  |  |  |  |
| Degree | 180° | 210° | 225° | 240° | 270° | 300° | 315° | 330° | 360° |
| Exact  Radian |  |  |  |  |  |  |  |  |  |
| Sin |  |  |  |  |  |  |  |  |  |
| Cos |  |  |  |  |  |  |  |  |  |
| Tan |  |  |  |  |  |  |  |  |  |

**Goal: Be able to determine all of the points on the unit circle**

1. **Complete the table with the exact fraction coordinates related to the SPECIAL angles related to the UNIT CIRCLE**

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|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **A** | **B** | **C** | **D** | **E** | | **F** | **G** | **H** | **I** | **J** | | **K** | **L** | **M** | **N** | **O** | | **P** | |

**Level Two Questions about rational function’s graphs: Things that make you think!**

**Assume m, n, p are positive integers**

You are given 

1. Give an example of n and m that would create a hole in your rational function’s graph
2. Give an example of n and m that DO NOT create a hole in your rational function’s graph, but still have vertical asymptotes that are integers
3. Explain why has a horizontal asymptote of 0, regardless of the value of n or m
4. Give a value of n and m that guarantee that there is NO x intercept

You are given 

1. Give an example of n, m, and p that would create a hole in your rational function’s graph
2. Give an example of n, m, and p that DO NOT create a hole in your rational function’s graph, but still have vertical asymptotes that are integers
3. Explain why has a horizontal asymptote of 1, regardless of the value of n, m, p
4. Explain why this rational function’s graph must pass through the origin

You are given 

1. Give an example of n, m, and p that would create a hole in your rational function’s graph
2. Give an example of n, m, and p that DO NOT create a hole in your rational function’s graph, but still have vertical asymptotes that are integers
3. Explain why has a horizontal asymptote of , regardless of the value of n, m, p
4. Explain why this rational function’s graph WILL NOT pass through the origin

You are given 

1. Give an example of n, m, and p that would create a hole in your rational function’s graph
2. Give an example of n, m, and p that DO NOT create a hole in your rational function’s graph, but still have vertical asymptotes that are integers
3. Explain why has a horizontal asymptote of , regardless of the value of n, m, p
4. Explain why this rational function’s graph WILL NOT pass through the origin
5. Explain why this rational function WILL NOT have a x intercept

**Level Two Questions about operations with rational expressions: Things that make you think!**

**Assume m, n, p, q, r, s, t, and u are DIFFERENT positive integers**

You are given 

1. Determine values of m, n, p, q, r, s, t, u that will yield a number for an answer when this is completely simplified
2. Determine values of m, n, p, q, r, s, t, u that will yield a linear expression in the numerator and a linear expression in the denominator for an answer when this is completely simplified

You are given 

1. Determine values of m, n, p, q, r, s, t, u that will yield an expression without a linear term in the numerator and an expression without a linear term in the denominator for an answer when this is completely simplified.

**Level Two Questions about radians: Things that make you think!**

1. Define a radian and support your definition with a picture
2. Explain why mathematicians and students should want their EXACT radian measures to be expressed with π, instead of without π. Use pictures to support your explanation

**The exam itself**

* You will be asked to answer at least two level 2 questions on the midterm.
* There will be a variety of formats of questions ranging from multiple choice, matching, and free response.
* You will need to bring a scientific calculator to class.
* No extended time on this exam unless specifically allowed by an IEP or a 504
* Any extended time given related to IEP or 504 must be completed on the same day outside of class time.
* You will be given a unit circle and special angles chart on the day of the midterm, but you will be required to complete one prior to the exam for a portion of the midterm grade.