**MPM2D Course Notes Pack** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**QR1: Basic Properties of Quadratics Quadratic Relations**

|  |  |  |  |
| --- | --- | --- | --- |
| Quadratic relation: | Second differences: | Axis of symmetry: | *Determine* if a relation is linear, quadratic or neither: |
| Standard form: | y-intercept: | x-intercepts / zeros: |
| Parabola: | Vertex:  | Maximum/minimum: |



**QR2: Transformations of** $y=x^{2}$ **Quadratic Relations**

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| --- | --- | --- |
| $$y=x^{2}$$ | Vertex form: | Direction of Opening: |
| Translation: | Reflection: | Vertical stretch/compression: |

|  |  |
| --- | --- |
| *Identify* the transformations that *a, h,* and *k* from the vertex form apply to $y=x^{2}$: | *Identify* the vertex & axis of symmetry from a graph of a parabola or its equation in vertex form: |
| *Sketch* by hand the graph of an equation in vertex form: | *Determine* the equation in vertex form from a given graph: |

**QR3: Solving Quadratic Equations Quadratic Relations**

|  |  |  |
| --- | --- | --- |
| Solutions/roots: | Quadratic formula: | Discriminant: |

|  |  |  |
| --- | --- | --- |
| *Solve* from factored form: | *Solve* from vertex form: | *Solve* from standard form: |
| *Expand & simplify* $(ax+b)(cx+d)$: | *Factor* $ax^{2}+bx+c$: | *Complete the square* for$ax^{2}+bx+c$: |

**QR4: Solving Problems** using the above skills **Quadratic Relations**

**AG1: Linear Systems Analytic Geometry**

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| System of linear equations: | Point of Intersection: |

|  |
| --- |
| *Solve* a system graphically: |

|  |  |
| --- | --- |
| *Solve* a system by elimination: | *Solve* a system by substitution: |

**AG2: Line Segments Analytic Geometry**

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| --- | --- | --- | --- |
| Midpoint: | Equation of a circle: | Negative reciprocal: | Perpendicular bisector: |

|  |  |  |
| --- | --- | --- |
| *Determine* the midpoint of a line segment: | *Determine* the length of a line segment given two end-points: | *Determine* the radius of a circle given its equation & sketch it: |
| *Determine* the equation of a circle given its radius & sketch it: | *Determine* the equation of the perpendicular bisector to a line segment: | *Determine* the shortest distance between a point and a line: |

**AG3: Verifying Geometric Properties** **Analytic Geometry**





**Tr1: Similar Triangles Trigonometry**

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| Similar triangles: | Proportion: | Scale factor: |

|  |  |
| --- | --- |
| *Verify* properties of similar triangles: | *Determine* missing sides in pairs of similar triangles: |

**Tr2: Right Triangle Trigonometry Trigonometry**

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| --- | --- | --- |
| Primary trigonometric ratios: | Inverse trigonometric ratios: | Pythagorean Theorem |

|  |  |  |  |
| --- | --- | --- | --- |
| Theta: | Opposite side: | Adjacent side: | Hypotenuse: |

|  |  |
| --- | --- |
| *Solve* for missing sides using sin, cos, & tan: | *Solve* for missing angles using sin, cos, & tan: |

**Tr3: Acute Triangle Trigonometry Trigonometry**

|  |  |
| --- | --- |
| Sine law: | Cosine law: |
| *Solve* for missing sides using sine law: | *Solve* for missing sides using cosine law: |
| *Solve* for missing angles using sine law: | *Solve* for missing angles using cosine law: |