

MPM2D Analytic Geometry Giant Review

- Find an equation for the line that has a slope of $\frac{3}{4}$ and passes through the point $(-2, -2)$. Graph the line.
- Find an equation for the line that passes through the points $(2,7)$ and $(-3,9)$.
- Find an equation for the line that is perpendicular to $y = -3x - 18$ and passes through the point $(-2,3)$. Graph both lines.
- Find the midpoint of the line segment \overline{AB} , where $A = (5, -3)$ and $B = (4,4)$.
- Find the length of the line segment \overline{AB} , where $A = (7,3)$ and $B = (4, -1)$.
- Find the equation of the perpendicular bisector to the line segment \overline{AB} , where $A = (-3, -3)$ and $B = (4,7)$. Graph the line segment \overline{AB} and its perpendicular bisector.
- Find the equation and length of the median from A of the triangle formed by the points $A(1,1)$, $B(-2,5)$, and $C(-3, -8)$.
- Find the equation of the line that gives the shortest distance from point $P(2,4)$ to the line through $C(1,5)$ and $D(-3, -7)$. Graph the point and both lines.
- Classify the triangle formed by each set of three points as scalene, isosceles, or equilateral.
 - $(2,0), (2,5), (-1,2)$
 - $(5,0), (5, -5), (8, -4)$
 - $(12,3), (7,4), (11,5)$
 - $(4,5), (0,4), (1,0)$
- Show that $\triangle LMN$ is a right triangle if $L = (6,0)$, $M = (8,8)$, and $N = (3,3)$.
- Find the midpoints of all the sides of $\triangle LMN$ from question 10. Show that the line connecting two midpoints is parallel to one side of the triangle.
- $\triangle ABC$ is isosceles; $A = (-6,2)$, $B = (1,3)$, $C = (-2, -1)$. Show that the median from C is an altitude of the triangle (*i.e.* it is perpendicular to \overline{AB}).
- Write the equation of the circle with centre $O(0,0)$ and radius 8.
- A circle has centre $O(0,0)$ and passes through the point $(12,5)$. Write the equation of the circle.
- A circle has diameter 4 and has centre $O(0,0)$. What is its equation?
- Show that points $P(3,4)$ and $Q(-4,3)$ are both on the circle $x^2 + y^2 = 25$.
- A rock is thrown into the centre of a circular swimming pool. The circular ripple formed on the surface increases in radius at a rate of 15 cm/s.
 - Write an equation for the circle formed by the ripple at time $t = 4$ s. Use $O(0,0)$ as the centre of the circle.
 - How long will it take the ripple to reach the edge of the pool if the pool has a radius of $3\text{m} = 300\text{cm}$?
 - A toy is floating at coordinates $(-40,10)$. How long will it take the ripples to reach the toy?
- Sketch the graph of the circle $x^2 + y^2 = 81$.