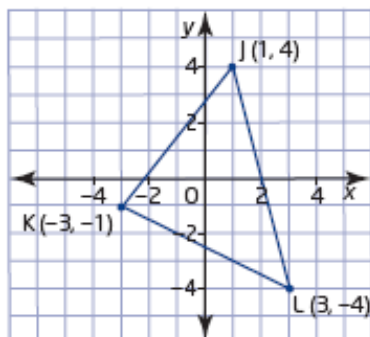


MPM 2DI EXAM REVIEW – Chapter 2: Analytic Geometry and Chapter 3: Geometric Properties

(Revised Fall 2016)



Use $\triangle JKL$ for Questions 1 and 2.

- Using the appropriate formulas learned in class, find the coordinates of the midpoint and the length of each line segment in $\triangle JKL$. Classify $\triangle JKL$ as isosceles, scalene or equilateral. Explain.
- For $\triangle JKL$, find an equation of the line that contains:
 - the median from vertex J
 - the median from vertex K
 - the right bisector of side JL.
- On a street map, the coordinates of the two fire stations in a town are A(10, 63) and B(87, 30). A neighbour reports smoke coming from the kitchen of a house at C(41, 18). Which fire station is closer to this house?
- Use analytic geometry to classify (be very specific!) the quadrilateral with vertices J(-2, 1), K(2, 3), L(4, -1) and N(0, -3). Explain your reasoning and show all your work.
- Draw the triangle with vertices J(2, 10), K(6, -6), and L(14, 6).
 - Calculate the coordinates of the midpoint, M, of side JK and the coordinates of the midpoint, N, of side JL.
 - Verify that MN is half the length of KL.
 - Verify that MN is parallel to KL.
- Does the point P(-3, -2) lie on the right bisector of the line segment with endpoints Q(-2, 5) and R(4, 1)? Show your work.
- Find an equation for each circle centred at the origin and passing through the point:
 - J(0, 7)
 - K(5, 6)
 - (8, $\sqrt{3}$)
- Find the radius of the circle defined by $x^2 + y^2 = 16$.
- What is the centroid of a triangle? Describe how to use analytic geometry to find the coordinates of the centroid of a triangle, if you are given the coordinates of the three vertices.
- Verify that $\triangle DEF$ is a right triangle, given that D(2, 14), E(8, 4) and F(18, 10).
- Find the midpoint of $\left(\frac{-1}{2}, 2\right)$ and $\left(3, \frac{2}{3}\right)$. (No decimals)
- If the midpoints of adjacent sides of any quadrilateral are joined, what type of quadrilateral is formed?
- Find an equation for each of the right bisectors of the sides of $\triangle JKL$, where J(1, 2), K(9, 8) and L(5, 0).
- Find the centre of the circle that passes through the three non-collinear points: P(9, -3), Q(8, 6) and R(-1, 5).

☺ **NOW RE-DO YOUR UNIT 2 AND UNIT 3 TESTS.**

DO NOT PROCEED TO UNIT 4 UNTIL YOU KNOW HOW TO DO EVERY QUESTION. ☺