

Unit 2.6B –Mid Unit Analytic Geometry Review

MPM 2D

- Given a line segment with coordinates A(-2,6) and B(3,-4). Determine:
 - The midpoint of AB
 - The slope of AB
 - The length of line segment AB
 - The equation of a line perpendicular to line segment AB that passes through (5,2)
 - The shortest distance from the point (5,2) to line segment AB
- The diameter of a circle has endpoints X(-9,12) and Y(9,-12). Determine:
 - The length of the radius of the circle
 - The coordinates of the centre of the circle (show algebraically)
 - The equation of the circle
 - The y-intercept(s)
 - Is the point (10,11) inside, outside, or on the circle? (show explanation)
 - A possible location for the centre of a different circle if it has the same radius and also has the point Y(9,-12) lying on this circle.
- A triangle has vertices K(2,5), L(4,-1), and M(-2,-5). Determine:
 - Equation of the median from M
 - Equation for the perpendicular bisector of KL
 - Equation of the altitude from M
- A theme park is going to be built near two highways. On a coordinate grid, with a scale of 1 unit representing 1 km, the park is located at P(3,4). Highway 416 is represented by the equation $y = 2x + 5$, and Highway 401 is represented by the equation $y = -\frac{1}{2}x + 2$. Highway exits must be built from each highway to provide the closest access to the theme park. Determine the distance between these two exits.

TextBook:

p. 154 # 1, 2

p. 100# 1-5, 8, 12, 13, 14ac, 15c, 16a, 18

p 104 # 1,2, 6,7,9,10

Answers:

- a) $M_{AB} = (\frac{1}{2}, 1)$ b) $m_{AB} = -2$ c) $\sqrt{125}$ units d) $y = \frac{1}{2}x - \frac{1}{2}$ e) $\sqrt{20}$ units
- a) 15 units b) (0,0) c) $x^2 + y^2 = 225$ d) ± 15 e) inside f) eg. (18,-24) or (18,0) or (0,-24)
- a) $y = \frac{7}{5}x - \frac{11}{5}$ b) $y = \frac{1}{3}x + 1$ c) $y = \frac{1}{3}x - \frac{13}{3}$
- 4.43 km