MPM2DO **Quiz 1 Analytic Geometry** Answers:

K **/ 25**

1. Evaluate. **K4**

a) $\sqrt{\frac{4}{9}} = \frac{2}{3}$

b) $\sqrt{100-36} = \sqrt{64}$
$= 8$

c) $\sqrt[3]{-27}$
$= -3$

d) $\sqrt[4]{-16}$
NULL SET. Can't Do.

2. Simplify fully. **K6**

a) $\sqrt{18}$
$= \sqrt{9} \times \sqrt{2}$
$= 3\sqrt{2}$ ✓ ✓

b) $\sqrt{72}$
$= \sqrt{36} \times \sqrt{2}$
$= 6\sqrt{2}$ ✓ ✓

c) $3\sqrt{50}$
$= 3 \times \sqrt{25} \times \sqrt{2}$
$= 3 \times 5\sqrt{2}$
$= 15\sqrt{2}$ ✓ ✓

3. Determine the mid-point of the line segment between (5, -3) and (-1, -7) . **K5**

$M_{AB} = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$ ✓

$= \left(\frac{5-1}{2}, \frac{-3-7}{2}\right)$ ✓

$= \left(\frac{4}{2}, \frac{-10}{2}\right)$ ✓

$= (2, -5)$ ✓

∴ The midpoint of the line segment is $(2, -5)$. ✓

4. A line segment has a mid-point of (2, $\frac{3}{4}$) and one end-point at (5, -1)
Determine the other endpoint. **K5**

$M(x,y) = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

$2 = \frac{5+x}{2}$ ✓

$4 = 5+x$

$-1 = x$ ✓

$\frac{3}{4} = \frac{-1+y}{2}$ ✓

$4(-1+y) = 3(2)$

$-4+4y = 6$

$4y = 6+4$

$4y = 10$

$y = 5/2$ ✓

∴ The other endpoint is $(-1, 5/2)$. ✓

5. Determine the distance between points **A** (-4, -3) and **B** (2, 9).
Answer in **exact** form? **K5**

$d_{AB} = \sqrt{(x_A - x_B)^2 + (y_A - y_B)^2}$ ✓

$= \sqrt{(-4-2)^2 + (-3-9)^2}$

$= \sqrt{(-6)^2 + (-12)^2}$ ✓

$= \sqrt{36+144}$

$= \sqrt{180}$ ✓

$= \sqrt{36} \times \sqrt{5}$

$= 6\sqrt{5}$ ✓ ✓

∴ The distance between the points A & B is $6\sqrt{5}$ units.