

Problem 0580/43/M/J/23/ Q11

M has coordinates $(4, 1)$ and N has coordinates $(-2, -7)$.

(a) Find the length of MN .

$$\sqrt{(-2-4)^2 + (-7-1)^2}$$

$$\sqrt{36 + 64}$$

$$\sqrt{100}$$

..... 10 [3]

(b) Find the gradient of MN .

$$\frac{-7-1}{-2-4} = \frac{-8}{-6}$$

..... $\frac{4}{3}$ [2]

(c) Find the equation of the perpendicular bisector of MN .

Mid point gradient

$$(1, -3) \quad -\frac{3}{4}$$

$$y = -\frac{3}{4}x + c$$

$$-3 = -\frac{3}{4} + c \quad \therefore c = -\frac{9}{4}$$

$$y = -\frac{3}{4}x - \frac{9}{4}$$

..... [4]