1. [4 *points*]

Consider the line segment $\overline{AB}$ with endpoints $A(3, -2)$ and $B(-1, 6)$.

(a) State in which quadrant point A lies.

(b) Find:

(i) midpoint, (ii) length, (iii) gradient.

2. [4 *points*]

The line segment $\overline{AB}$ has endpoint $A(4, 1)$. Find the coordinates of B, given that the gradient of this line segment is $\frac{3}{4}$ and the length $\overline{AB}$ is 5.

3. [4 *points*]

Sketch the set of points satisfying the equations:

(a) $y = 1 - x^2$

(ii) $xy - 2x + y - 2 = 0$