Summary of 3A

1. Distance formula: The distance from $P_1(x_1, y_1)$ to $P_2(x_2, y_2)$ is
   \[ d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} \]

2. Circle equation: A circle is the set of points at a distance $r =$ radius from the center $=(a, b)$. The equation is
   \[ (x-a)^2 + (y-b)^2 = r^2 \]

3. Midpoint formula: The midpoint of $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$ is
   \[ M\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) \]

   \[ x_1 + \frac{1}{2}(x_2-x_1) = \frac{x_1+x_2}{2} \quad \text{and} \quad y_1 + \frac{1}{2}(y_2-y_1) = \frac{y_1+y_2}{2} \]