Useful facts about lines

1. Equation of a (non vertical) line:
   $y = mx + b$; m is called slope.

2. Two lines $L1 : y = m_1x + b_1$ and
   $L_2 : y = m_2x + b_2$ are parallel iff $m_1 = m_2$.

3. Two lines $L1 : y = m_1x + b_1$ and
   $L_2 : y = m_2x + b_2$ are perpendicular iff
   $m_1 = -\frac{1}{m_2}$

4. The slope of the line through the points
   (x_0, y_0) and (x_1, y_1) is $m = \frac{y_1 - y_0}{x_1 - x_0}$

5. The equation of the line through point P=(x_0, y_0)
   and Q=(x_1, y_1) is $\frac{y - y_0}{x - x_0} = \frac{y_1 - y_0}{x_1 - x_0}$ if
   $x_1 - x_2 \neq 0$ and $y = x_1$ if $x_1 = x_0$.

6. The equation of a line through $P(x_0, y_0)$ with slope m is $y = y_0 + m(x - x0)$

Useful facts about circles

1. Equation of a circle (in standard form): $(x - x_0)^2 + (y - y_0)^2 = r^2$ The circle has center (x_0, y_0) and radius r.

2. If a line L is tangent to a circle at P, then the line is perpendicular to the radius OP.