

Review B: Analytic Geometry

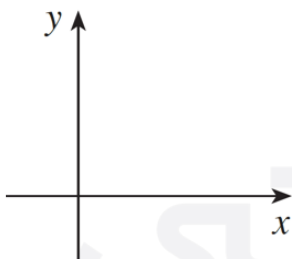
1) Equation of the Straight Line

2) Equation of the Circle

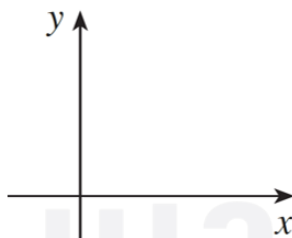
1) Equation of the Ellipse

1) Equation of the Straight Line

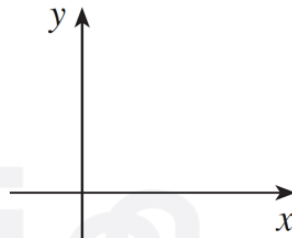
• Given 2 points



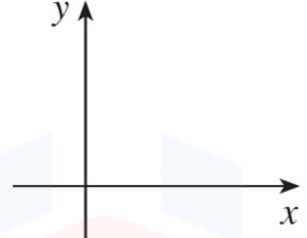
• Point-Slope Equation



• Slope-Intercept Equation

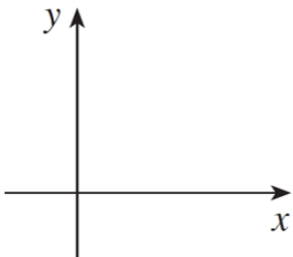


• Intercepts Equation

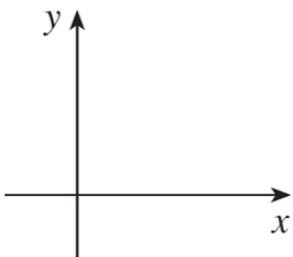


1) Equation of the Straight Line

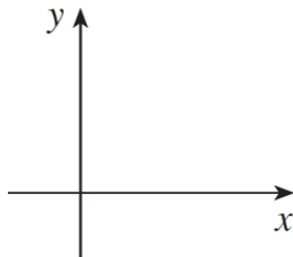
• Horizontal Lines



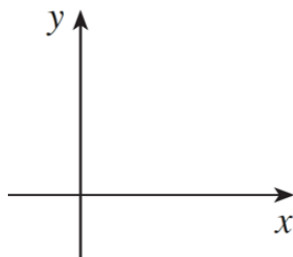
• Vertical Lines



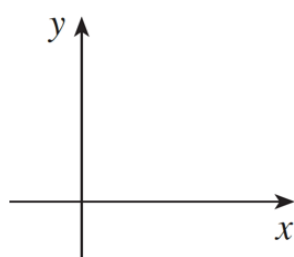
• Parallel Lines



• Perpendicular Lines

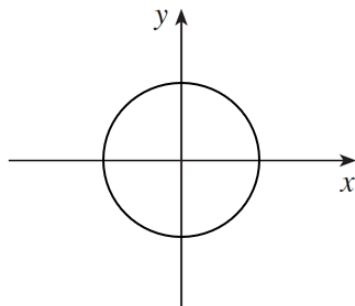


• Slopes & Angles

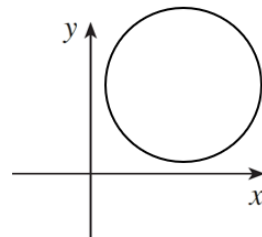


2) Equation of the Circle

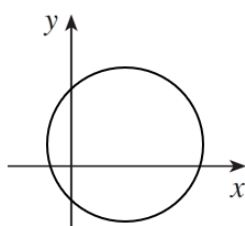
- Standard Form



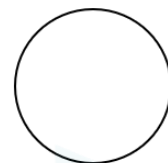
- Shifted Form



- General Form

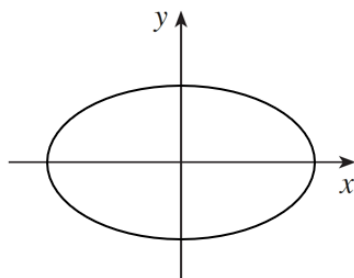


- Given the 2 endpoints of a diameter

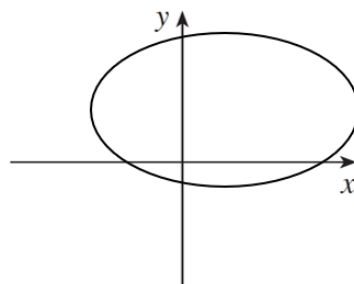


3) Equation of the Ellipse

- Standard Form



- Shifted Form



1. Find an equation for the line that passes through the point $(2, -5)$ and

(a) has slope -3

(b) is parallel to the x -axis

(c) is parallel to the y -axis

(d) is parallel to the line $2x - 4y = 3$

2. Find an equation for the circle that has center $(-1, 4)$ and passes through the point $(3, -2)$.

3. Find the center and radius of the circle with equation $x^2 + y^2 - 6x + 10y + 9 = 0$.



4. Let $A(-7, 4)$ and $B(5, -12)$ be points in the plane.

(a) Find the slope of the line that contains A and B .

Notes:

(b) Find an equation of the line that passes through A and B .

What are the intercepts?

4. Let $A(-7, 4)$ and $B(5, -12)$ be points in the plane.

(c) Find the midpoint of the segment AB .

Notes:

(d) Find the length of the segment AB .



4. Let $A(-7, 4)$ and $B(5, -12)$ be points in the plane.

(e) Find an equation of the perpendicular bisector of AB .

Notes:

(f) Find an equation of the circle for which AB is a diameter.

5. Sketch the region in the xy -plane defined by the equation or inequalities.

(a) $-1 \leq y \leq 3$

(b) $|x| < 4$ and $|y| < 2$

(c) $y < 1 - \frac{1}{2}x$

(d) $y \geq x^2 - 1$

(e) $x^2 + y^2 < 4$

(f) $9x^2 + 16y^2 = 144$

