2.3 - Lines

Review problems

1. **Simplifying rational expressions.** Simplify:
$$\frac{(2+3)^2 - 5 + 2}{-2(3-5)+7}$$

2. **Finding intercepts of equations.** Find all intercepts:
(a) $3x - 6y = 8$ (b) $y = x^2 - 3x$

Basic knowledge

1. Find the equation of a line passing through the given points. If a line is not vertical write the equation in slope-intercept form.
(a) $(2, -3)$, $(-1, 0)$ (b) $(2, 5)$, $(2, 6)$ (c) $(2, 5)$, $(3, 5)$

2. Find the x-and y-intercepts and sketch the graph of each equation. Label the intercepts on each graph (if they are present).
(a) $2x - 5y = 9$ (b) $9x - 10 = 8$ (c) $3 = 2 - 7y$ (d) $x^2 + y^2 = 1$

3. Given line $4x - 6y = 3$ find:
(a) an equation of a line passing through point $(-1, -4)$ that is perpendicular to the given line
(b) an equation of a line passing through point $(2, -7)$ that is parallel to the given line
(c) a vertical line passing through the x-intercept of the given line

Intermediate

4. Find the equation of a line perpendicular to $y = \sqrt{2}x + 4$, passing through point $(3\sqrt{2}, 2)$.

Advanced

5. Find the equation of a line passing through points:
$(\sqrt{3}, 2)$, $(5\sqrt{3}, \sqrt{2})$

6. The graph of a line has slope $m = -2$. If points $A(3, -4)$, and $B(1, c)$ lie on the graph of this line, find the value of c.