

MATH 249
Worksheet #1

1. (a) Solve for x: $|2x + 1| \leq |x - 2|$
(b) Solve for x: $\frac{3}{x+1} > \frac{1}{3}$.
2. Find the radius and centre of the circle $x^2 + 4x + y^2 - 2y = 11$.
3. Solve for x:
 - (a) $|x + 1| + 2 > 0$
 - (b) $\frac{3}{x+1} \geq \frac{2}{x+3}$.
4. Given four lines $l_1 : 3x + 2y = 1$ $l_2 : 2y - 3x = 0$ $l_3 : 3x - 2y = 0$ and $l_4 : 2x - 3y = 2$ choose all which are
 - (a) parallel
 - (b) perpendicular.
5. Solve for x:
 - (a) $\frac{1}{x+1} \leq 1 + x$
 - (b) $|3x - 2| > 0$.
6. Find an equation of the line (a) perpendicular (b) parallel to the x-axis passing through the point $(-1, 3)$.
7. Solve for x:
 - (a) $3x + 7 > x^2$
 - (b) $\frac{x}{2} < \frac{2}{x+3}$.
8. Which of the given circles has bigger radius
 $x^2 - 6x + y^2 = 7$ or $x^2 + y^2 + 2y = 15$?
9. Simplify for $h \neq 0, 7$ $\frac{\frac{3h+4}{7-h} - \frac{4}{7}}{\frac{25h}{7}}$.

10. Simplify and find the restrictions on x $\frac{1}{1 + \frac{1}{x+1}}$.
11. Simplify and find the restrictions on x $\frac{x^3 + 5x^2 + 6x}{12 + x - x^2}$.
12. Simplify and find the restrictions on x $\frac{x}{x^2 + x - 2} - \frac{2}{x^2 - 5x + 4}$.
13. Solve $\frac{x}{x-1} < \frac{1}{x+1}$.
14. Solve $\frac{x}{x-1} > \frac{4}{x}$.