

Pre-Calculus
Section 2.8 – day 2
Practice Problems

Name _____

Group Members _____

Directions: Show all of your work on this sheet of paper. Write your **answers only** on the answer sheet. When you have completed all problems, staple everyone's individual **work pages** together with the group's answer sheet on top.

Solve each of the following inequalities algebraically. Show appropriate supporting work (i.e. sign charts).

1) $\frac{(2x-7)(x+1)}{x+5} > 0$

Sign chart: $x < -5$ (N), $-5 < x < -1$ (P), $-1 < x < 7/2$ (N), $x > 7/2$ (P)

Solution: $(-5, -1) \cup (7/2, \infty)$

2) $x^2|2x+9| \geq 0$

Always ≥ 0 (pointing to x^2)
Always ≥ 0 (pointing to $|2x+9|$)

Solution: $(-\infty, \infty)$

3) $\frac{x-1}{(x-4)\sqrt{x+2}} < 0$

Sign chart: $x < -2$ (P), $-2 < x < 1$ (N), $1 < x < 4$ (P), $x > 4$ (N)

Solution: $(1, 4)$

4) $\frac{3x-1}{(x+3)\sqrt{x-5}} \leq 0$

Sign chart: $x < -3$ (P), $-3 < x < 1/3$ (N), $1/3 < x < 5$ (P), $x > 5$ (N)

Solution: \emptyset

5) $\frac{x+2}{x^2-9} > 0$

$(x+3)(x-3)$

Sign chart: $x < -3$ (P), $-3 < x < -2.5$ (N), $-2.5 < x < 3$ (P), $x > 3$ (N)

Solution: $(-3, -2) \cup (3, \infty)$

6) $(3x-4)\sqrt{2x+1} \geq 0$

Sign chart: $x < -1/2$ (P), $-1/2 < x < 4/3$ (N), $x > 4/3$ (P)

Solution: $[4/3, \infty)$

7) $\frac{x-3}{|x+2|} < 0$

Sign chart: $x < -3$ (P), $-3 < x < -2$ (N), $-2 < x < -3$ (P), $x > -2$ (N)

Solution: $(-\infty, -2) \cup (-2, 3)$

8) $\frac{x^3-4x}{x^2+2} \leq 0$

$x(x+2)(x-2)$
 $x(x^2-4)$

Sign chart: $x < -3$ (P), $-3 < x < -2$ (N), $-2 < x < 0$ (P), $0 < x < 2$ (N), $2 < x < 3$ (P), $x > 3$ (N)

Solution: $(-\infty, -2] \cup [0, 2]$