# Solving Inequalities Review WS

Name _____

Solve the following inequalities algebraically. Record your solutions using inequality notation and a number line.
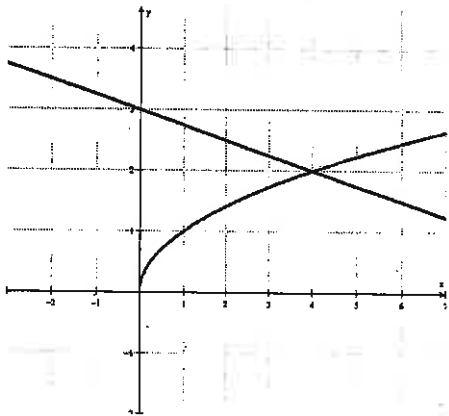
1. $x^2 - 7x \geq -6x + 30$
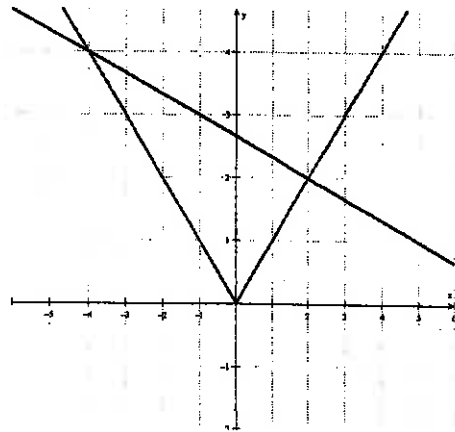
2. $-x^2 + 9x - 15 < 5$

3. $x^3 + 2x^2 - 35x \geq 0$

Solve the following inequalities using the graphs provided. Record your solution using inequality notation and a number line.
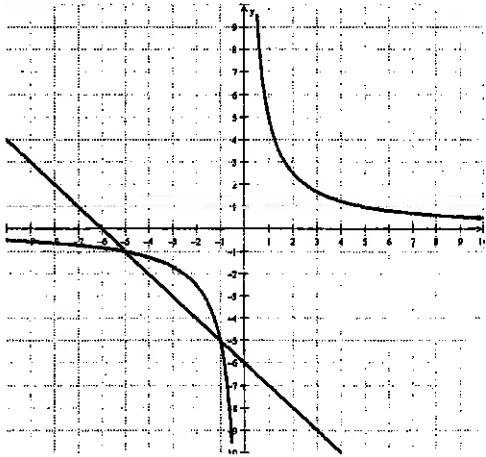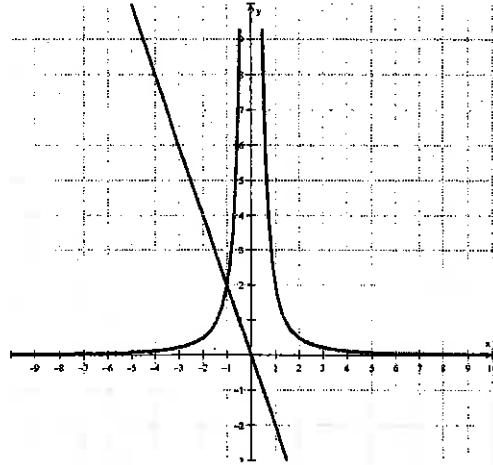
4. $\sqrt{x} < 3 - 0.25x$



5. $|x| < \dfrac{8}{3} - \dfrac{1}{3}x$
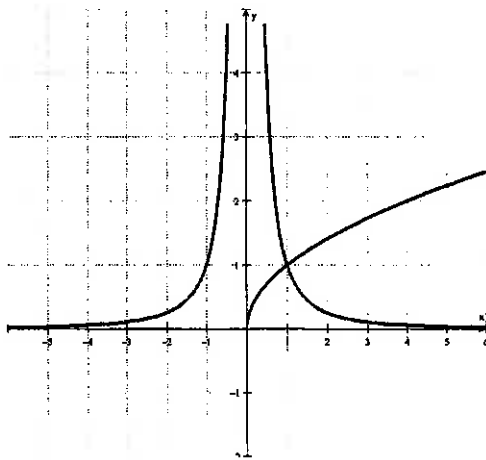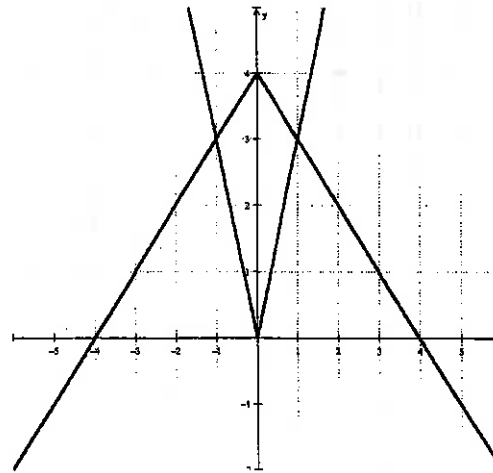
6. $\dfrac{5}{x} > -6 - x$



7. $\dfrac{2}{x^2} \le -2x$



8. $\dfrac{1}{x^2} \le \sqrt{x}$



9. $|x| \le -|x| + 4$

**Solving Inequalities Review WS**        Name _____ Key _____

Solve the following inequalities algebraically. Record your solutions using inequality notation and a number line.

1. $x^2 - 7x \geq -6x + 30$

  $\phantom{xxxx} +6x \; -30 \qquad f(0) =$

  $x^2 - x - 30 \geq 0$

  $(x+5)(x-6) \geq 0 \qquad \boxed{-5 \leq x \leq 6}$



2. $-x^2 + 9x - 15 < 5$

  $0 < x^2 - 9x + 20$

  $0 < (x-5)(x-4)$



  $\boxed{x < 5 \qquad x > 4}$

3. $x^3 + 2x^2 - 35x \geq 0$

  $x(x^2 + 2x - 35) \geq 0$

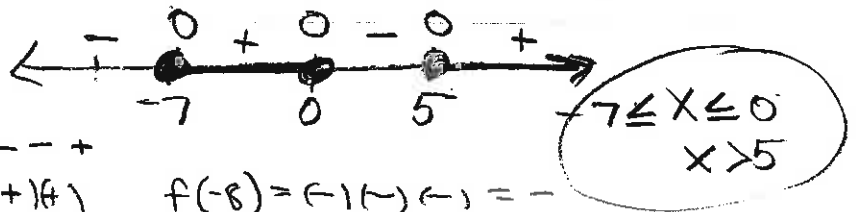  $x(x - 5)(x + 7)$

  zeros @ $x = 0, 5, -7$
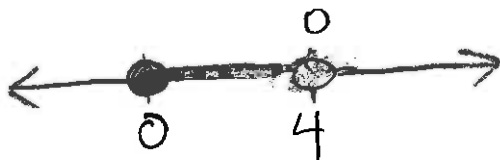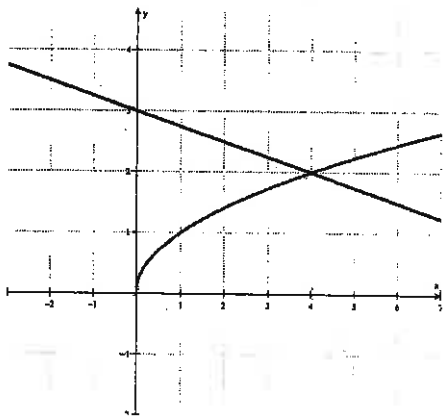
  $f(1) = + - + = -$

  $f(-1) = - - - + $

  $f(6) = (+)(+)(+)$    $f(-8) = (-)(-)(-) = -$
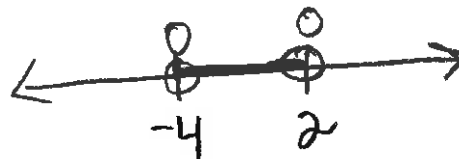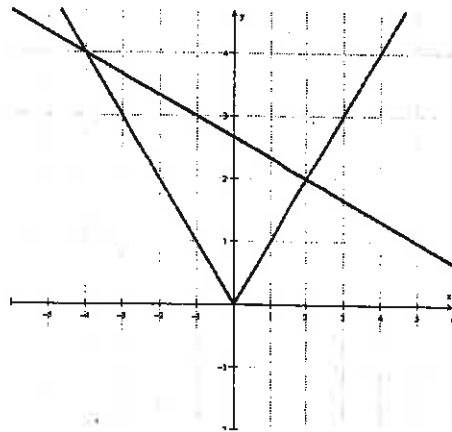


  $\boxed{-7 \leq x \leq 0 \\ x > 5}$

Solve the following inequalities using the graphs provided. Record your solution using inequality notation and a number line.
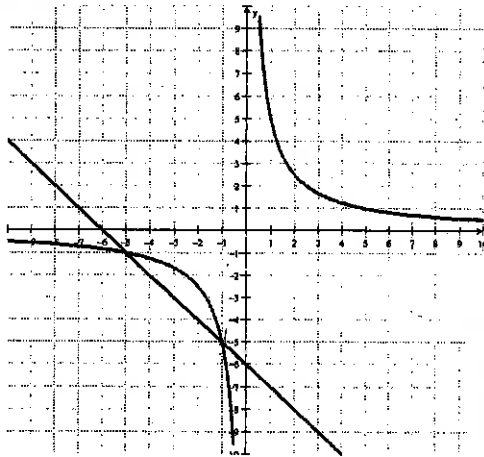
4. $\sqrt{x} < 3 - 0.25x$





  $0 \leq x < 4$

5. $|x| < \dfrac{8}{3} - \dfrac{1}{3}x$
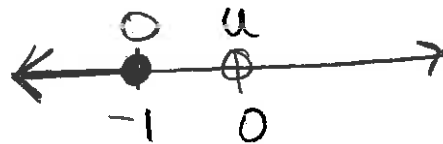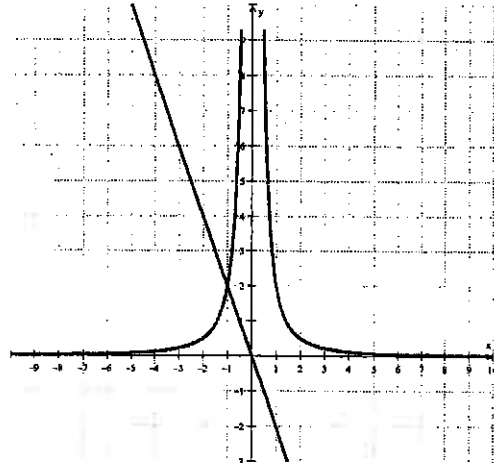




  $-4 < x < 2$

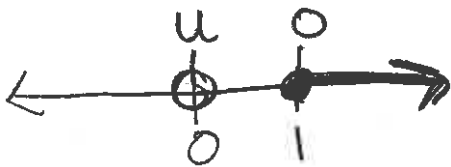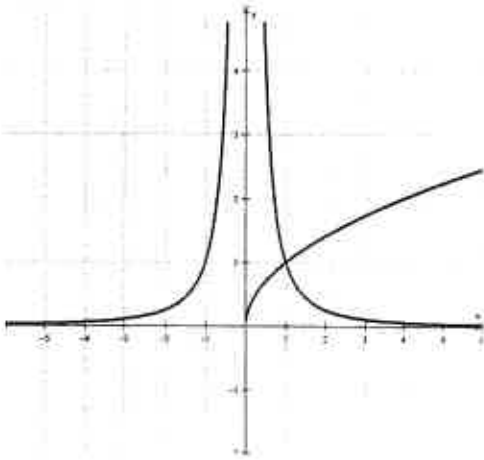6. $\dfrac{5}{x} > -6 - x$



$X \neq 0$



$-5 < X < -1$    $X > 0$

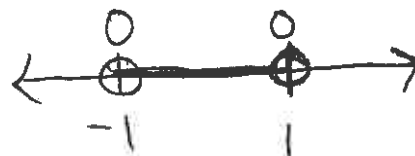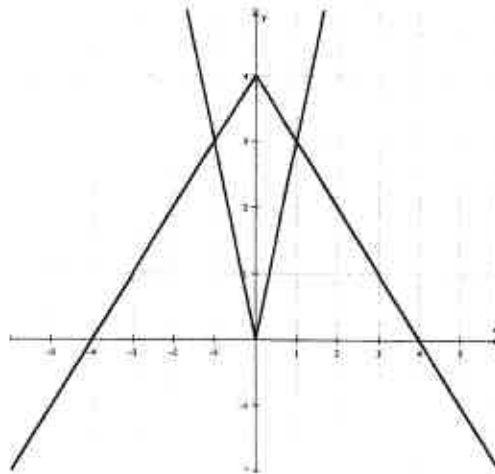7. $\dfrac{2}{x^2} \leq -2x$





$X \neq 0$
$X \leq 1$

8. $\dfrac{1}{x^2} \leq \sqrt{x}$





$X \geq 1$

9. $|x| \leq -|x| + 4$





$-1 \leq X \leq 1$