MR12 Homework 6 **Absolute Value Inequalities**

Solve and then graph the following (#1- #5) inequalities:

1. $|2x-5|+2=13$

$-2\ -2$

$|2x-5|=11$ $\quad$ $|2x-5|=-11$

$+5\ +5$ $\quad$ $+5\ +5$

$2x=16$ $\quad$ $\frac{2x}{2}=\frac{-6}{2}$

$x=8$ $\quad$ $x=-3$

Check in original

$|2(8)-5|+2=13$ $\quad$ $|2(-3)-5|+2=13$

$|16-5|+2$ $\quad$ $|-6-5|+2=13$

$11+2=13$ ✓ $\quad$ $|-11|+2=13$

$11+2=13$ ✓

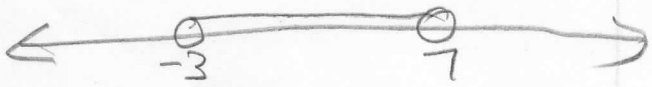
2. $|6-3x|<15$

$|6-3x|<15$ and $|6-3x|>-15$

$-6\ -6$ $\quad$ $-6\ -6$

$\frac{-3x}{-3}<\frac{9}{-3}$ $\quad$ $\frac{-3x}{-3}>\frac{-21}{-3}$

$x>-3$ $\quad$ $x<+7$



3. $|5-x|+4\le 9-4$

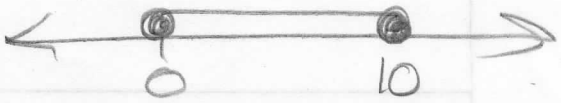
$-4\ -4$

$|5-x|\le 5$ and $|5-x|\ge -5$

$-5\ -5$ $\quad$ $-5\ -5$

$-x\le 0$ $\quad$ $\frac{-x}{-1}\ge\frac{-10}{-1}$

$x\ge 0$ $\quad$ $x\le 10$



4. $|11-2x|-6>11$

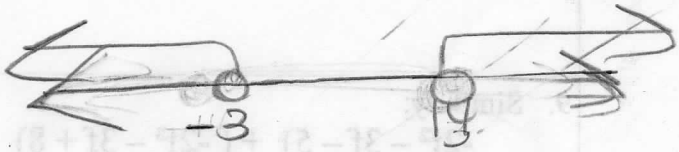
$+6\ +6$

$11-2x>17$ $\quad$ $11-2x<-17$

$-11\ -11$ $\quad$ $-11\ -11$

$\frac{-2x}{-2}>\frac{6}{-2}$ $\quad$ $\frac{-2x}{-2}<\frac{-28}{-2}$

$x<-3$ $\quad$ $x>+14$



5. $|7-x|+2\le 12$

$-2\ -2$

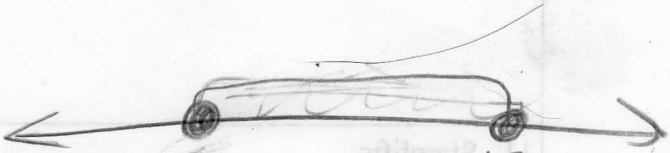
$|7-x|\le 10$ $\quad$ $|7-x|\ge -10$

$-7\ -7$ $\quad$ $-7\ -7$

$-x\le 3$ $\quad$ $|-x|\ge -17$

$\frac{-x}{-1}\ge\frac{3}{-1}$ $\quad$ $x\le 17$

$x\ge -3$



6. Simplify: $(4x^2-3x-5)-(3x^2-10x+3)$

$4x^2-3x-5-3x^2+10x-3 = x^2+7x-8$

7. Divide: $3x^3-2x^2+4x-2\div x+2$

$3x^2-8x+20$ $\quad$ $\frac{42}{x+2}$

$x+2\ \overline{)\ 3x^3-2x^2+4x-2}$

$3x^3+6x^2$

$-8x^2+4x$

$-8x^2-16x$

$20x-2$

$20x+40$ $\quad$ $R-42$

Name Key **Test 1 Review Intermediate Algebra and Trig**

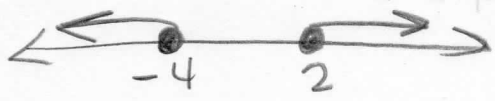
(Do work on looseleaf as a practice)

1. Solve for x and express the answer as an inequality:

$12x - 16x + 17 \geq 25$

$x \leq 2$

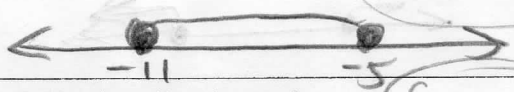
2. Graph: $(x \leq -4) \vee (x \geq 2)$ OR Disjunction



3. Solve and express the solution set of

$|x + 8| \leq 3$ and $|x+8| \geq -3$

$x \leq -5$ and $x \geq -11$



4. Solve for x: $|x + 5| - 7 = 3x$

$\{-1, -3\}$

$|x+5| = 3x+7$ $\quad$ $|x+5| = -(3x+7)$

$5 = 2x+7$ $\quad$ $x+5 = -3x-7$

$-2 = 2x$ $\quad$ $4x = -12$

$x = -1$ $\quad$ $x = -3$

5. Solve for all values of x:

$|7 - x| - 3 = 0$ $\{4, 10\}$

$|7-x| = 3$ $\quad$ $7-x = -3$

$-x = -4$ $\quad$ $-x = -10$

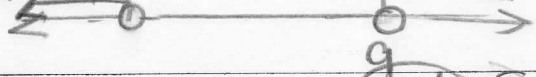
$x = 4$ $\quad$ $x = 10$

6. Find the solution set for the inequality:

$2x - 3 > 15$ or $3 - 7x < 17$

$2x > 18$ $\quad$ $-7x > 14$ $\quad$ $x < -2$

$x > 9$



7. Solve and express the solution set of

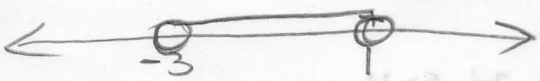
$-8 \leq 3y - 20 < 52$

$-8 \leq 3y - 20$ $\quad$ $3y - 20 < 52$

$12 \leq 3y$ $\quad$ $3y < 72$

$4 \leq y$ $\quad$ $y < 24$

8. Graph $(x > -3) \wedge (x < 1)$ And Conjunction



9. Simplify:

$-2f^2 - 3f - 5) + (-2f^3 - 3f + 8)$

$-2f^3 - 2f^2 - 6f + 3$

10. Simplify:

$(-2b^{-2}c^3)^3$

$-8b^{-6}c^9 = \frac{-8c^9}{b^6}$

11. Simplify:

$(6w - 11w^2) - (4 + 7w^2)$

$6w - 11w^2 - 4 - 7w^2$

$-18w^2 + 6w - 4$

12. Simplify:

$(x + y)(x^2 - 3xy + 2y^2)$

$x^3 - 3x^2y + 2xy^2 + yx^2 - 3xy^2 + 2y^3$

$x^3 - 2x^2y - xy^2 + 2y^3$

13. Simplify:

$(28d^3k^2 + d^2k^2 - 4dk^2)(4dk^2)^{-1}$

$(4dk^2)^{-1} = \frac{1}{4dk^2}$

$\frac{28d^3k^2 + d^2k^2 - 4dk^2}{4dk^2} = 7d^2 + \frac{d}{4} - 1$

14. Simplify:

$(2m^3 + 3m - 14) \div (m - 2)$

Ans. $2m^2 + 4m + 5 \left(\frac{4}{m-2}\right)$