College Review Math Section 3A INEQUALITIES IN ONE-VARIABLE

Solutions to inequalities are found the same way you solve equations except for… switching the inequality sign around when you divide (or multiply both sides of the equation by a negative.

Graphing solution sets to inequalities are done on a number line
by shading and including either open or closed circles.

Examples:
Solve the given inequality, and graph its solution set.

1) $10 - 3x > -17$

$-3x > -27$
$x < 9$

2) $\frac{2b+9}{3} \le -7$

$2b + 9 \le -21$
$2b \le -30$
$b \le -15$

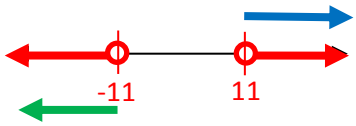
3) $3(a + 4) - (5a - 2) < 2(8 - a)$

$3a + 12 - 5a + 2 < 16 - 2a$
$-2a + 12 < 16 - 2a$
$12 < 16$
Since the outcome is a true statement: *infinitely many sol.s*

ABSOLUTE VALUE INEQUALITIES

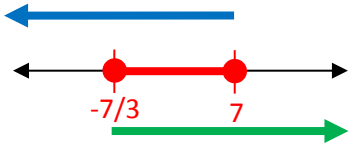
4) $|x| > 11$

$x > 11$ or $x < -11$
(great "or") (less th "and")



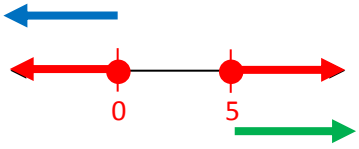
5) $|3y - 7| \le 14$

$3y - 7 \le 14$ and $3y - 7 \ge -14$
$3y \le 21$ $3y \ge -7$
$y \le 7$ and $y \ge -7/3$



6) $2|5 - 2x| \ge 10$

$|5 - 2x| \ge 5$
$5 - 2x \ge 5$ or $5 - 2x \le -5$
$-2x \ge 0$ $-2x \le -10$
$x \le 0$ or $x \ge 5$



2 --TOUGH ONES – FOR FUN!!

7) $\frac{1-3r}{9} < \frac{2-5r}{2}$

$2 - 6r < 18 - 45r$ (cross multiply)
$2 + 39r < 18$
$39r < 16$
$r < 16/39$

8) $\left|\frac{4}{9}p + \frac{5}{6}\right| \le -\frac{5}{12}$

An absolute value can never be less than a negative no. therefore: $\emptyset$