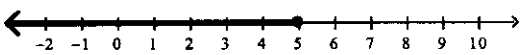
6.1-6.4, 6.7 Review
Algebra 22

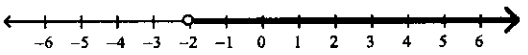
Name: A. Ick.y

Write an inequality that is represented by the graph.

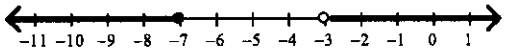
1. $x \leq 5$



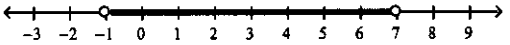
2. $x > -2$



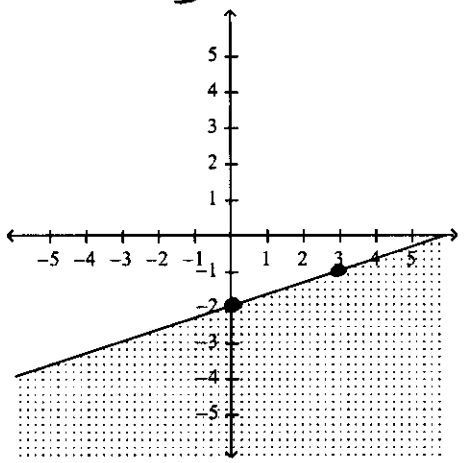
3. $x \leq -7$ or $x > -3$



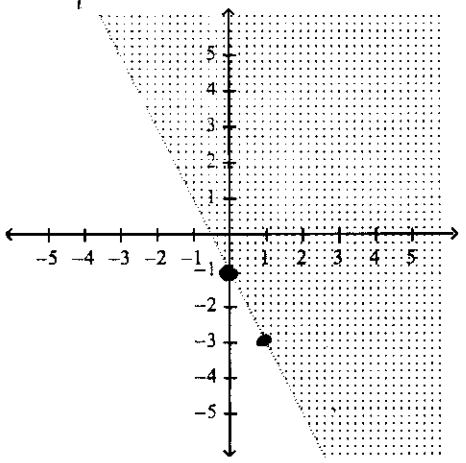
4. $-1 < x < 7$



5. $y \leq \frac{1}{3}x - 2$



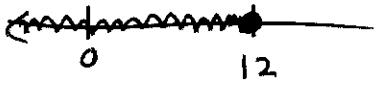
6. $y > -\frac{1}{2}x - 1$



Solve the inequality. Graph your solution.

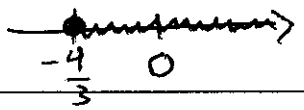
7. $n - 3 \leq 9$

$n \leq 12$



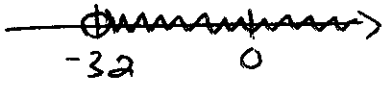
8. $\frac{3y}{3} \geq \frac{-4}{3}$

$y \geq -\frac{4}{3}$



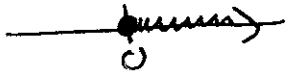
9. $\frac{w}{-4} < 8$

$w > -32$



10. $0 \geq -108b$

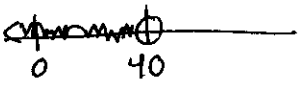
$0 \leq b$



11. $\frac{2}{5}x > 16$

$x < 16 \cdot \frac{5}{2}$

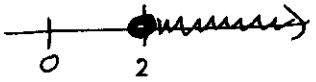
$x < 40$



12. $4x - 7 \geq 1$

$4x \geq 8$

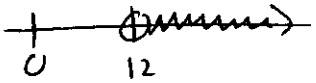
$x \geq 2$



13. $\frac{-22}{-2} > \frac{-2(c-1)}{-2}$

$11 < c - 1$

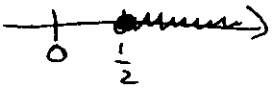
$12 < c$



14. $-17z + 14 \geq 11z$

$\frac{14}{28} \geq \frac{28z}{28}$

$\frac{1}{2} \geq z$

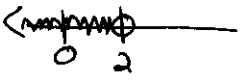


15. $10 - 12d > -5d - 4$

$10 > 7d - 4$

$\frac{14}{7} > \frac{7d}{7}$

$2 > d$



16. $3(4-a) > 5a + 13 - 8a$

$12 - 3a > -3a + 13$

$+3a \quad +3a$

$12 > 13$

No Solutions

17. $3(5-6x) \leq 2(11-9x)$

$15 - 18x \leq 22 - 18x$

$+18x \qquad +18x$

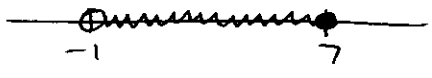
$15 \leq 22$

All Real Solutions

18. $9 < 3x + 12 \leq 33$

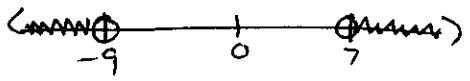
$-3 < 3x \leq 21$

$-1 < x \leq 7$



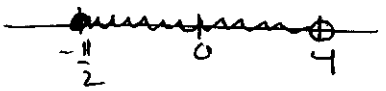
19. $x+14<5$ *or* $-6x<-42$

$x<-9$ or $x>7$



20. $-8<-2x\leq 11$

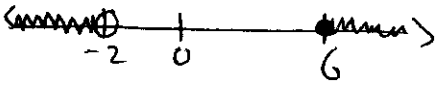
$4>x\geq -\frac{11}{2}$



21. $6x+3<5x+1$ *or* $\frac{1}{3}x-4\geq -2$

$x+3<1 \qquad \frac{1}{3}x\geq 2$

$x<-2$ or $x\geq 6$



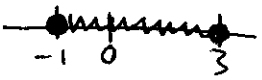
22. $9\geq\frac{3}{4}(8x-12)\geq -15$

$\frac{4}{3}\cdot 9\geq 8x-12\geq \frac{4}{3}\cdot -15$

$12\geq 8x-12\geq -20$

$24\geq 8x\geq -8$

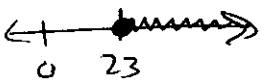
$3\geq x\geq -1$



Write the verbal sentence as an inequality. Then solve the inequality and graph your solution.

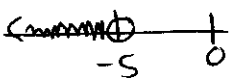
23. Fifteen is less than or equal to the sum of –8 and *n*.

$15\leq -8+n \rightarrow 23\leq n$



24. The product of 7 and *b* is less than –35.

$7b<-35 \rightarrow b<-5$



25. The difference of $10x$ and $3x$ is less than or equal to the sum of $4x$ and 21.

$10x-3x\leq 4x+21 \rightarrow$

$3x\leq 21$

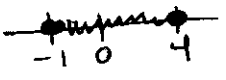
$x\leq 7$

26. Three more than $2x$ is greater than or equal to 1 *and* less than or equal to 11.

$2x+3\geq 1$ and $2x+3\leq 11$

$1\leq 2x+3\leq 11 \rightarrow -2\leq 2x\leq 8$

$-1\leq x\leq 4$



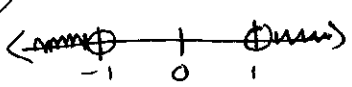
27. Three times the sum of x and 1 is less than 0 *or* the difference of x and 4 is greater than –3.

$3(x+1)<0$ or $x-4>-3$

$\downarrow$

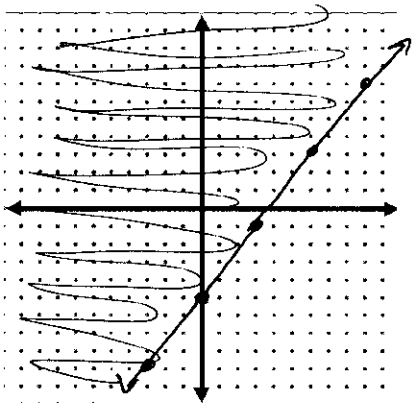
$x+1<0 \qquad x>1$

$x<-1$ or

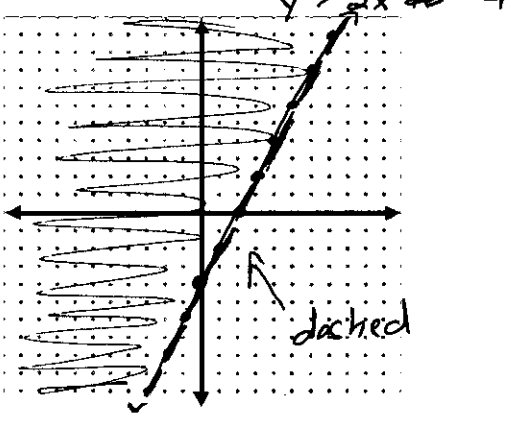


Graph the inequality.

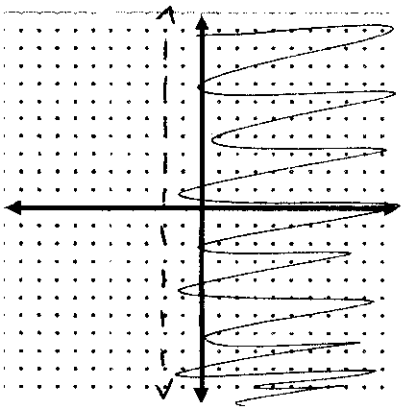
28. $y \geq \frac{4}{3}x - 5$



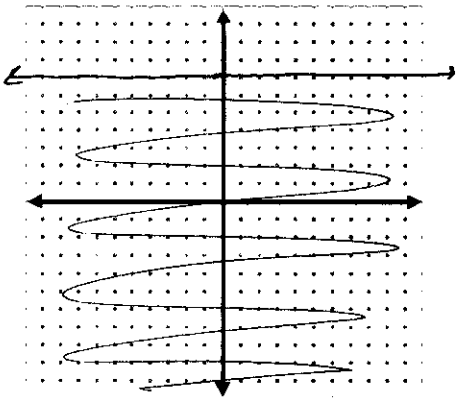
29. $4x - 2y < 8$ $-2y < -4x + 8$ $y > 2x - 4$



30. $x > -2$



31. $y \leq 7$

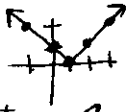


Absolute Value Review
Algebra 22

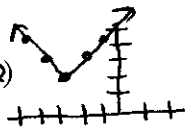
Name: A. Key

Use a separate sheet of graph paper to first sketch these without your calculator.

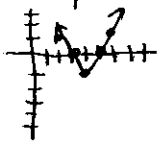
1) $y=|x-1|$ vertex: (1, 0)



2) $y=|x+3|+2$ vertex: (-3, 2)



3) $y=|x-4|-1$ vertex: (4, -1)



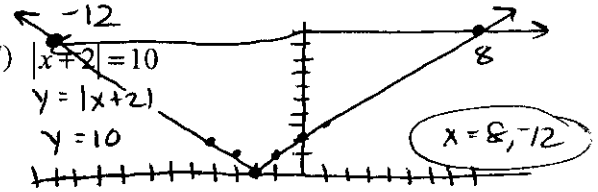
4) $y=-|x|+4$ vertex: (0, 4)

5) $y=2|x-3|$ vertex: (3, 0)

6) $y=-\frac{1}{3}|x|+1$ vertex: (0, 1)

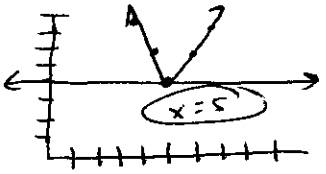
Solve the following absolute value equations graphically.

7) $|x+2|=10$



8) $2|x-5|+4=4$

$y=2|x-5|+4$
$y=4$



Solve the following absolute value equations algebraically.

9) $|-x+7|=19$

$-x+7=19 \quad -x+7=-19$
$-x=12 \quad -x=-26$
$x=-12 \quad x=26$

10) $\frac{1}{3}|2x+3|=3$

$|2x+3|=9$
$2x+3=9 \quad 2x+3=-9$
$2x=6 \quad 2x=-12$
$x=3 \quad x=-6$

11) $-|3x-6|=-12$

$|3x-6|=12$
$3x-6=12 \quad 3x-6=-12$
$3x=18 \quad 3x=-6$
$x=6 \quad x=-2$

12) $-2|4x-2|=-20$

$|4x-2|=10$
$4x-2=10 \quad 4x-2=-10$
$4x=12 \quad 4x=-8$
$x=3 \quad x=-2$

14) $|2.5x+4.1|=8.1$

$2.5x+4.1=8.1 \quad 2.5x+4.1=-8.1$
$2.5x=4 \quad 2.5x=-12.2$
$x=1.6 \quad x=-4.88$

15) $|2x|-5=-15$

$|2x|=-10$
No Solutions

16) $-5|3x|-5=25$

$-5|3x|=30$
$|3x|=-6$
No Sol.

17) $8|3x-10|-12=20$

$8|3x-10|=32$
$|3x-10|=4$

$3x-10=4 \quad 3x-10=-4$
$3x=14 \quad 3x=6$
$x=\frac{14}{3} \quad x=2$

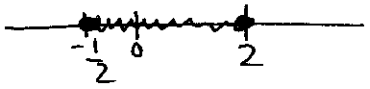
Solve the following absolute value inequalities. Graph your solutions.

18) $|4x-3| \leq 5$

$4x-3 \leq 5$ $\quad 4x-3 \geq -5$

$4x \leq 8$ $\quad 4x \geq -2$

$x \leq 2$ and $x \geq -\frac{1}{2}$



$-\frac{1}{2} \leq x \leq 2$

19) $-8|x+4| > 48$

$|x+4| < -6$

$x+4 < -6$ $\quad x+4 > 6$

$x < -10$ or $x > 2$

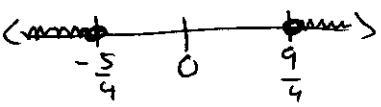
20) $|12x-6| \geq 21$

$12x-6 \geq 21$ $\quad 12x-6 \leq -21$

$12x \geq 27$ $\quad 12x \leq -15$

$x \geq \frac{27}{12}$ $\quad x \leq -\frac{15}{12}$

$x \geq \frac{9}{4}$ or $x \leq -\frac{5}{4}$



21) $6|2x+5|-7 > 59$

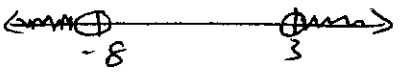
$6|2x+5| > 66$

$|2x+5| > 11$

$2x+5 > 11$ $\quad 2x+5 < -11$

$2x > 6$ $\quad 2x < -16$

$x > 3$ or $x < -8$

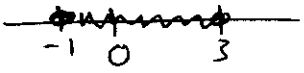


23) $3|x-1| \leq 6$

$|x-1| \leq 2$

$x-1 \leq 2$ $\quad x-1 \geq -2$

$x \leq 3$ and $x \geq -1$



$-1 \leq x \leq 3$

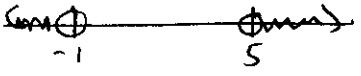
24) $\frac{3}{2}\cdot\frac{2}{3}|4x-8| > 8 \cdot \frac{3}{2}$

$|4x-8| > 12$

$4x-8 > 12$ $\quad 4x-8 < -12$

$4x > 20$ $\quad 4x < -4$

$x > 5$ or $x < -1$



25) $3|2x-3|+6 < 21$

$3|2x-3| < 15$

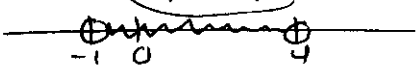
$|2x-3| < 5$

$2x-3 < 5$ $\quad 2x-3 > -5$

$2x < 8$ $\quad 2x > -2$

$x < 4$ and $x > -1$

$-1 < x < 4$



26) $-2|x-5| \geq 10$

$|x-5| \leq -5$

No Solutions