Algebra 1 Review – Test Review Name Key

Evaluate the expression for the given value of the variable.

1. $3x^2 - 1; x = -1$

$3(-1)^2 - 1$

$3(1) - 1 = 2$

2. $\sqrt{16t^2}; t = -4$

$\sqrt{16(-4)^2} = \sqrt{16 \cdot 16}$

$= 16$

Solve the equation.

3. $|3x - 4| = 9$

$3x - 4 = 9$ or $3x - 4 = -9$

$3x = 13$ $\quad$ $3x = -5$

$x = 13/3$ or $x = -5/3$

4. $7 - 3x = 30$

$-7 \quad -7$

$\frac{-3x}{-3} = \frac{23}{-3}$

$x = -\frac{23}{3}$

Solve the equation for y.

5. $\left(\frac{2y}{5x}\right)5x = (2 + 4x)5x$

$\frac{2y}{2} = \frac{10x + 20x^2}{2}$

$y = 5x + 10x^2$

6. $y + .5xy = x + 2$

$\frac{y(1 + .5x)}{1 + .5x} = \frac{x + 2}{1 + .5x}$

$y = \frac{x + 2}{1 + .5x}$

Solve for the given variable.

7. $\frac{5}{3}A = \frac{3}{5}(B - 10)\frac{5}{3}$

Solve for B.

$\frac{5}{3}A + 10 = B - 10 + 10$

$B = \frac{5}{3}A + 10$

8. $2X = \frac{Y + Z}{Z}2$

Solve for Z.

$xz - 2 = Y + z$

$-z \quad -z$

$xz - z = y$

$\frac{z(x-1)}{x-1} = \frac{y}{x-1}$

$z = \frac{y}{x-1}$

9. The volume of a rectangular box can be found with the formula $V = l \cdot w \cdot h$,
Solve for l.

$\frac{V}{wh} = \frac{l \cdot w \cdot h}{wh}$

$l = \frac{V}{wh}$

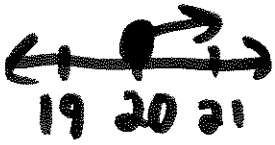
Solve the inequality. Graph your solution.

10. $.25x+5\geq 10$

$-5 \quad -5$

$\frac{.25x}{.25} \geq \frac{5}{.25}$

$x \geq 20$



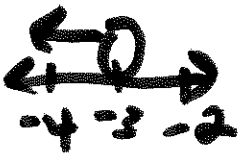
11. $12x+21<3x-6$

$-3x \quad -3x$

$9x+21<-6$

$-21 \quad -21$

$\frac{9x}{9}<\frac{-27}{9}$ $\quad x<-3$



12. $|5x+5|>15$

$5x+5>15$ or $5x+5<-15$

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

$5x>10 \qquad 5x<-20$

$x>2$ or $x<-4$

13. $|3x+5|\leq 20$

$3x+5\leq 20$ and $3x+5\geq -20$

$3x\leq 15 \qquad 3x\geq -25$

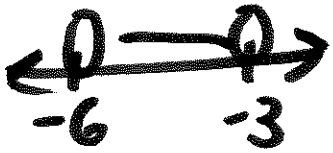
$x\leq 5$ and $x\geq -\frac{25}{3}$

$-\frac{25}{3}\leq x\leq 5$

* 14. $4<x+10<7$

$-10 \quad -10 \quad -10$

$-6<x<-3$

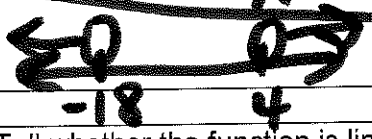


15. $2x+5>13$ or $\frac{1}{2}x-3<-12$

$-5 \quad -5 \qquad +3 \quad +3$

$2x>8 \qquad (2)\frac{1}{2}x<-9(2)$

$x>4$ or $x<-18$



16. Identify the domain and range of the given relation. Then tell whether the relation is a function.

$(-5,2),(0,2),(1,-3),(2,-1),(2,2)$

Domain: $\{-5,0,1,2\}$

Range: $\{-3,-1,2\}$

Is the relation a function?

Circle YES or NO

17. Tell whether the function is linear. Then evaluate the function for the given value of x.

$f(x)=-\frac{3}{4}x^2+2x-4;$ f(-4)

Is the function linear?

Circle YES or NO

$f(-4)=-24$

$-\frac{3}{4}(-4)^2+2(-4)-4$

$-12-8-4$

18. Tell whether the lines are parallel, perpendicular, or neither.

$m = \frac{2-5}{11-4} = \frac{-3}{7}$

Line 1: through $(4,5),(11,2)$

Line 2: through $(-8,2),(-1,5)$

$m = \frac{5-2}{-1+8} = \frac{3}{7}$

Circle One: PARALLEL

PERPENDICULAR

NEITHER

19. Tell whether the lines are parallel, perpendicular, or neither.

$m = \frac{3-5}{-5-3} = \frac{-2}{-8} = \frac{1}{4}$

Line 1: through $(3,5),(-5,3)$

Line 2: through $(6,4),(10,5)$

$m = \frac{5-4}{10-6} = \frac{1}{4}$

Circle One: PARALLEL

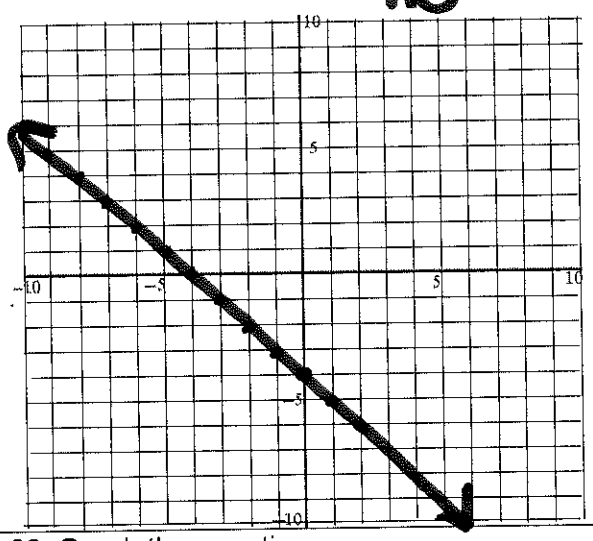
PERPENDICULAR

NEITHER

20. Graph the equation. Label any intercepts.

$y = -x - 4$

x	y
0	-4
-4	0



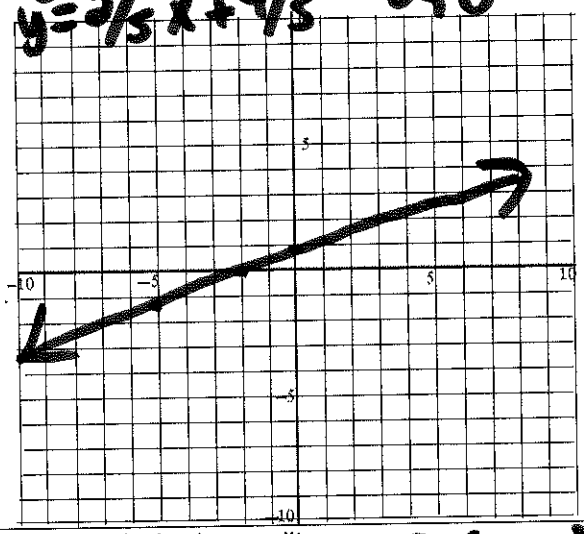
21. Graph the equation. Label any intercepts.

$-2x + 5y = 4$

$5y = 2x + 4$

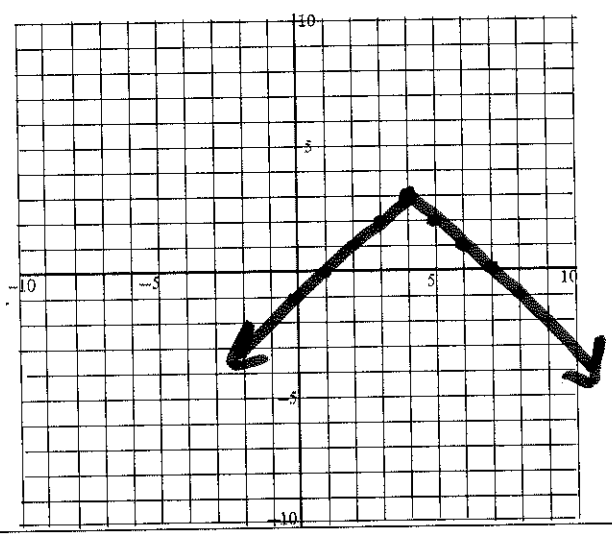
$y = 2/5\,x + 4/5$

x	y
0	4/5
-2	0



22. Graph the equation.

$y = -|x-4| + 3$

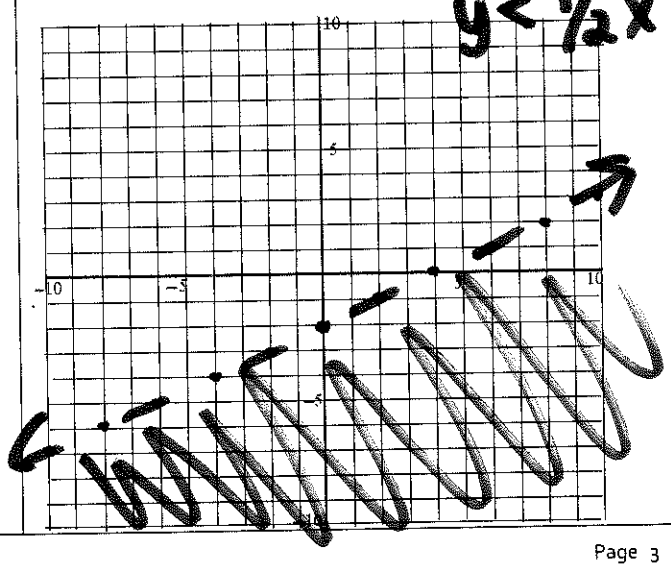


23. Graph the inequality.

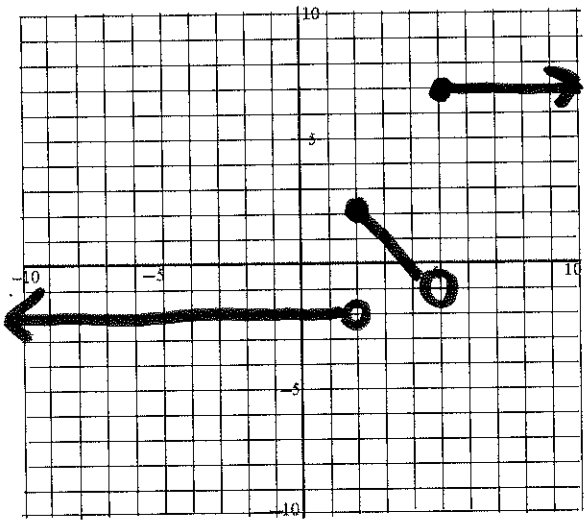
$x - 2y > 4$

$\frac{-2y}{-2} > \frac{-x}{-2} + \frac{4}{-2}$

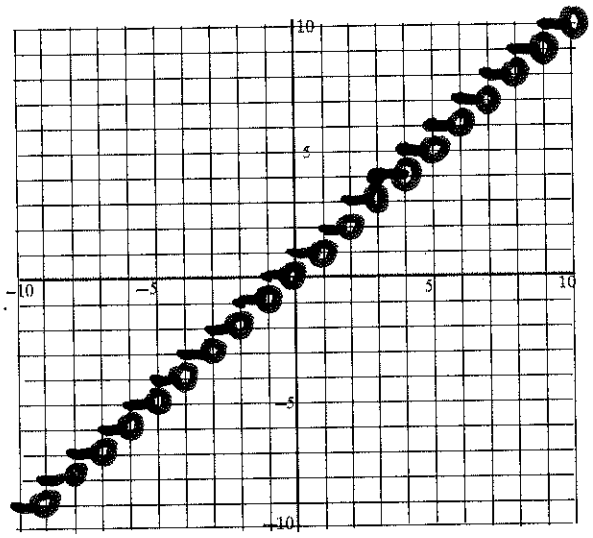
$y < \frac{1}{2}x - 2$



24. $f(x)=\begin{cases}-2 & \text{if } x<2\\ -x+4 & \text{if } 2\le x<5\\ 7 & \text{if } x\ge 5\end{cases}$



25. $f(x)=[x-3]+4$



Write an equation of the line that satisfies the given conditions.

26. through (3,-2) and (-1,4)

$m=\frac{4--2}{-1-3}=\frac{6}{-4}=-\frac{3}{2}$

$4=-\frac{3}{2}(-1)+b$

$4=\frac{3}{2}+b$

$-\frac{3}{2}\quad -\frac{3}{2}$

$2\frac{1}{2}=b$

$y=-\frac{3}{2}x+\frac{5}{2}$

27. Perpendicular to the line $y=\frac{2}{5}x+1$ $m=-\frac{5}{2}$

and goes through the point (4,-3)

$-3=-\frac{5}{2}(4)+b$

$-3=-10+b$

$+10\quad +10$

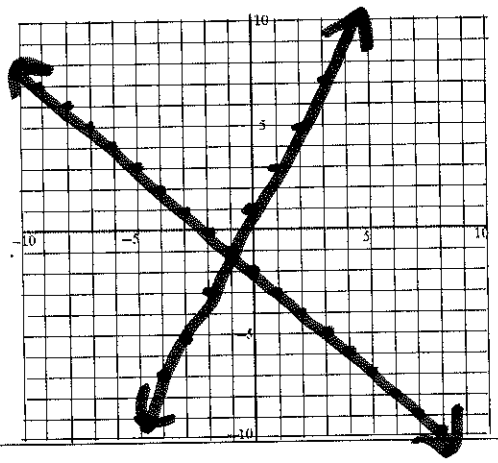
$7=b$

$y=-\frac{5}{2}x+7$

28. Graph the linear system and estimate the solution.

$y = -x - 2$

$2x = y - 1$ $y = 2x + 1$

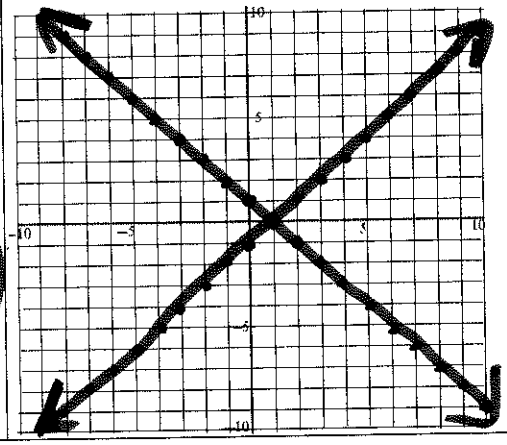


$(-1,-1)$

29. Graph the equation. Label any intercepts.

$x + y = 1$ $y = -x + 1$

$y - x = -1$ $y = x - 1$



Solve the system using any algebraic method.

30. $2(x + 2y = 5)$

$-2x + 3y = -3$

$2x + 4y = 10$

$7y = 7$

$y = 1$

$x + 2(1) = 5$

$x + 2 = 5$

$x = 3$

$(3, 1)$

31. $5x - 2y = -7$

$-3x + 2y = 5$

$2x = -2$

$x = -1$

$5(-1) - 2y = -7$

$-5 - 2y = -7$

$+5 \quad +5$

$-2y = -2$

$y = 1$

$(-1, 1)$

32. $7(.1x + -.1y = 2)$

$(.7x + .7y = 7)1$

$.7x - .7y = 14$

$\frac{1.4x}{1.4} = \frac{21}{1.4}$

$x = 15$

$.1(15) - .1y = 2$

$1.5 - .1y = 2$

$-.1y = .5$

$y = -5$

$(15, -5)$

33. $-2x - 3y = 7$

$4x + y = 1$

$y = 1 - 4x$

$-2x - 3(1 - 4x) = 7$

$-2x - 3 + 12x = 7$

$10x - 3 = 7$

$10x = 10$

$x = 1$

$y = 1 - 4(1)$

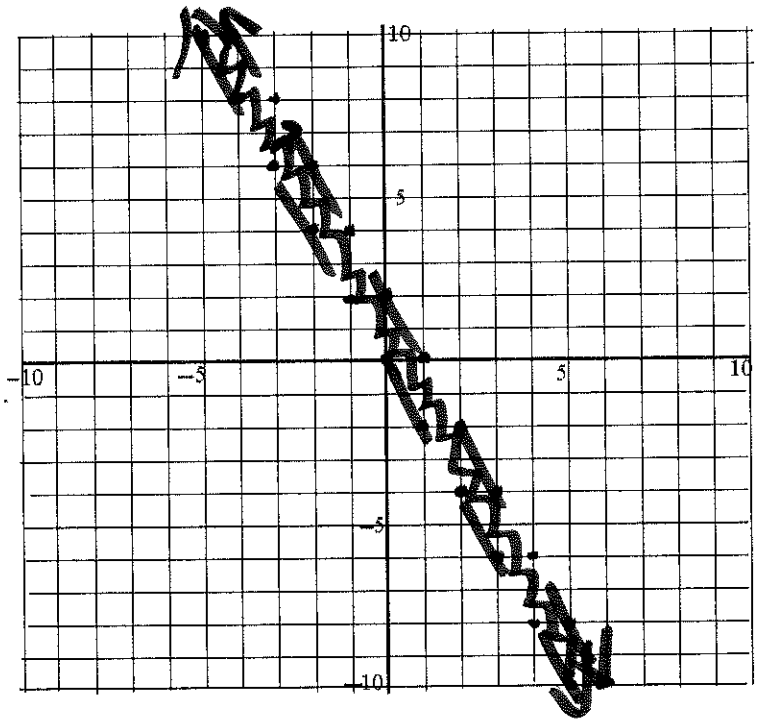
$y = -3$

$(1, -3)$

34. Graph the system of linear inequalities.

$y > -2x$

$y < -2x + 2$



35. Graph the system of linear inequalities.

$y \geq 1$

$3x > 2y - 10$

$x < 2$

$2y - 10 < 3x$

$+10 \quad +10$

$\frac{2y}{2} < \frac{3x}{2} + \frac{10}{2}$

$y < \frac{3}{2}x + 5$