

Algebra 2
Unit 2 TEST REVIEW

Name: Jaussi Period: _____
Date _____ Desk _____

Score _____

There are no calculators allowed on this test review! **Show your work** and do your best!

Evaluate each expression.

1. $5 + 3 \times 4 + 2$
 $= 5 + 12 + 2$
 $= 17 + 2 = \boxed{19}$

2. $3^2 + 2 \times 5 - 4$
 $= 9 + 2 \times 5 - 4$
 $= 9 + 10 - 4$
 $= 19 - 4 = \boxed{15}$

Solve each equation.

3. $2(4 + 2x) = -98$
 $8 + 4x = -98$
 $\frac{8 + 4x}{-8} = \frac{-98}{-8}$
 $\frac{4x}{4} = \frac{-106}{4}$
 $x = \frac{-106}{4}$
 $x = \frac{-53}{2}$

4. $77 = 7(-a + 4)$
 $77 = -7a + 28$
 $\frac{77}{-28} = \frac{-7a + 28}{-28}$
 $\frac{49}{-7} = \frac{-7a}{-7}$
 $-7 = a$
 $a = \boxed{-7}$

State whether each function is a linear function. If it not a polynomial, explain why.

5. $f(x) = \frac{-3}{2}x - 5$
 yes, it is a linear function.

6. $g(x) = 2x^2 - 3$
 No, it is not a linear function because the "x" is squared. (There is an exponent)

Given the following function, state the slope and the y-intercept of the linear equation. (HINT: the function needs to be in slope-intercept form.)

7. $y = \frac{-3}{4}x - 2$
 Slope: $\frac{-3}{4}$
 y-intercept: $(0, -2)$

8. $3x + y = 5$
 $\frac{-3x + y = 5}{-3x \quad -3x}$
 $y = -3x + 5$
 slope: -3
 y-intercept: $(0, 5)$

slope-intercept form: $y = mx + b$
 $m = \text{slope}$
 $b = \text{y-intercept}$

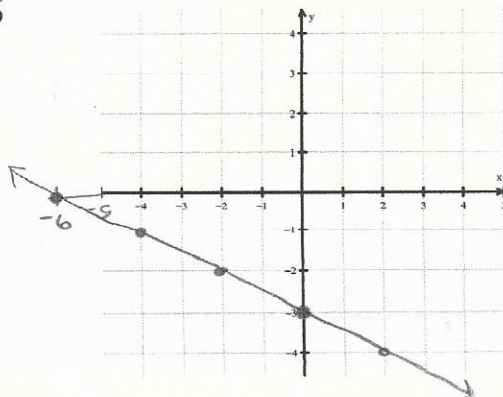
Find the x-intercept and the y-intercept of each linear equation.

9. $3x - 5y = -15$
 $\frac{3x}{3} = \frac{-15}{3}$
 $x = -5$
 $\frac{-5y}{-5} = \frac{-15}{-5}$
 $y = 3$
 x-intercept: $(-5, 0)$
 y-intercept: $(0, 3)$

10. $y = 3x - 9$
 $y = 3(0) - 9$
 $y = -9$
 $0 = 3x - 9$
 $+9 \quad +9$
 $\frac{9}{3} = \frac{3x}{3}$
 $x = 3$
 x-intercept: $(3, 0)$
 y-intercept: $(0, -9)$

Graph the following linear equation.

11. $x + 2y = -6$
 $x = -6$
 $\frac{2y}{2} = \frac{-6}{2}$
 $y = -3$



or $x + 2y = -6$
 $\frac{-x + 2y = -6}{-x \quad -x}$
 $\frac{2y}{2} = \frac{-x - 6}{2}$
 $y = \frac{-1}{2}x - 3$

Write the following in standard form.

$$12. y = 2x - 5$$
$$\frac{-2x - 2x}{-2x - 2x}$$
$$-1(-2x + y = -5)$$
$$\boxed{2x - y = 5}$$

Determine if the following point is a solution to the function.

$$13. f(x) < -3x + 7; (3, -2) \quad \text{Remember: } f(x) = y$$
$$\begin{aligned} -2 &< -3(3) + 7 \\ -2 &< -9 + 7 \\ -2 &< -2 \end{aligned}$$
$$\boxed{\text{No, not a solution}}$$

Write the equation of the line in slope-intercept form ($y = mx + b$) given the following.

14. slope: $-1/2$ y-intercept: -2

$$\boxed{y = -\frac{1}{2}x - 2}$$

15. through: $(-4, 1)$ slope: $-3/2$

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

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

$$1 = -6 + b$$
$$\begin{array}{r} +6 \\ \hline 7 = b \end{array}$$

$$7 = b$$

$$\boxed{y = -\frac{3}{2}x + 7}$$

16. through: $(-1, 1)$ and $(-3, 3)$

$$m = \frac{3-1}{-3-(-1)} = \frac{2}{-2} = -1 \quad y = -1x + b$$

$$1 = -1(-1) + b$$

$$1 = 1 + b$$

$$0 = b$$

$$\boxed{y = -x}$$

17. through: $(2, 0)$, parallel to $y = -3x - 1$

$$m = -3 \quad y = -3x + b$$

$$0 = -3(2) + b$$

$$0 = -6 + b$$

$$\begin{array}{r} +6 \\ \hline b = 6 \end{array}$$

$$b = 6$$

$$\boxed{y = -3x + 6}$$

18. through: $(-3, 1)$, perpendicular to $y = \frac{1}{4}x + 5$

$$m = -4 \quad y = -4x + b$$

$$1 = -4(-3) + b$$

$$1 = 12 + b$$

$$\begin{array}{r} -12 \\ \hline b = -11 \end{array}$$

$$b = -11$$

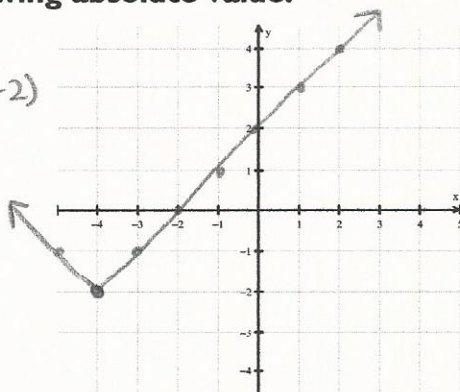
$$\boxed{y = -4x - 11}$$

Graph the following absolute value.

$$19. y = |x + 4| - 2$$

vertex: $(-4, -2)$

slope: 1



Solve the following absolute value. (HINT: there may be two solutions.)

$$20. \left| \frac{n}{5} \right| = 2$$

$$5 \cdot \frac{n}{5} = 2 \cdot 5$$

$$\boxed{n=10}$$

$$-\left(\frac{n}{5}\right) = 2$$

$$5 \cdot \frac{-n}{5} = 2 \cdot 5$$

$$\frac{-n}{-1} = \frac{10}{-1}$$

$$\boxed{n=-10}$$

$$21. |x-2|=5$$

$$x-2=5$$

$$\frac{x-2}{+2 \quad +2} = \frac{5}{+2 \quad +2}$$

$$\boxed{x=7}$$

$$-(x-2)=5$$

$$-x+2=5$$

$$\frac{-x+2}{-2 \quad -2} = \frac{5}{-2 \quad -2}$$

$$\frac{x}{-1} = \frac{3}{-1}$$

$$\boxed{x=-3}$$

Solve the following compound inequalities.

$$22. 7 < x-1 < 12$$

$$\frac{+1 \quad +1 \quad +1}{+1 \quad +1 \quad +1}$$

$$\boxed{8 < x < 13}$$

$$23. x-10 > -19 \text{ and } x-7 \leq -6$$

$$\frac{+10 \quad +10}{+10 \quad +10} \quad \frac{+7 \quad +7}{+7 \quad +7}$$

$$\boxed{x > -9}$$

$$\text{and } \boxed{x \leq 1}$$

$$24. \frac{3r}{3} < 12 \text{ and } r-2 \geq -10$$

$$\frac{+2 \quad +2}{+2 \quad +2}$$

$$r < 4$$

$$r \geq -8$$

$$\boxed{r < 4 \text{ and } r \geq -8}$$

$$25. \frac{b}{8} \leq -1 \text{ or } b-3 > 12$$

$$8 \cdot \frac{b}{8} \leq -1 \cdot 8$$

$$b \leq -8$$

$$\frac{b-3 > 12}{+3 \quad +3}$$

$$b > 15$$

$$\boxed{b \leq -8 \text{ or } b > 15}$$

26. What is the solution to $|x-1| = -3$. Explain your answer.

NO solution because an absolute value is a distance from zero and you can't have a negative distance.