Name NLT

Summer Algebra I Extended Packet

This packet should help prepare you for Algebra I Extended at Trumbull High School. Please complete these problems before the first day of school.

A TI 84 graphing calculator is required for all math classes at Trumbull High. You may use the calculator for all problems of this packet.

1. Evaluate.

a) $(2+5)^2-(3)(9)$

$7^2 - 27$

$49 - 27$

$\boxed{22}$

b) $[2-5(14-9)]+2\div 2$

$[2-5(5)]+2\div 2$

$[2-25]+1$

$[-23]+1 = \boxed{-22}$

c) $\frac{2(4-1)^2}{5^2-9}$

$\frac{2(3)^2}{25-9}$ $\frac{2(9)}{16}$

$\frac{18}{16} \rightarrow \boxed{\frac{9}{4}}$

d) $\frac{6^2-3^3}{4-5(8-4)}$

$\frac{36-27}{4-5(4)}$

$\frac{9}{4-20} \rightarrow \frac{9}{-16} = \boxed{\frac{-9}{16}}$

2. Evaluate $3x-2y$ given that $x=3, y=-4$.

$3(3)-2(-4)$

$9-(-8)$

$9+8 \rightarrow \boxed{17}$

3. Evaluate x^2 given that $x=-5$.

$(-5)^2 = \boxed{25}$

4. Solve each equation. Show all work.

a. $-14x + 5 = 47$

$-5 \quad -5$

$\frac{-14x}{-14} = \frac{42}{-14}$

$\boxed{x = -3}$

b. $\frac{x}{3} - 5 = -2$

$+5 \quad +5$

$3 \cdot \frac{x}{3} = 3 \cdot 3$

$\boxed{x = 9}$

c. $50 + 9x = 11x + 24$

$-9x \quad -9x$

$50 = 2x + 24$

$-24 \quad -24$

$\frac{26}{2} = \frac{2x}{2}$

$\boxed{x = 13}$

d. $8m - 35 = 5(m - 11)$

$8m - 35 = 5m - 55$

$-5m \quad -5m$

$3m - 35 = -55$

$+35 \quad +35$

$\frac{3m}{3} = \frac{-20}{3}$

$\boxed{m = \frac{-20}{3}}$

e. $12x + 16 = 10 - 3(x - 2)$

$12x + 16 = 10 - 3x + 6$

$12x + 16 = 16 - 3x$

$+3x \quad +3x$

$15x + 16 = 16$

$-16 \quad -16$

$15x = 0$

$\boxed{x = 0}$

f. $\frac{x-3}{2} = 7$

$2 \cdot \frac{x-3}{2} = 7 \cdot 2$

$x - 3 = 14$

$+3 \quad +3$

$\boxed{x = 17}$

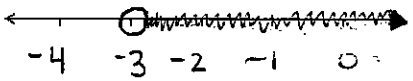
5. Solve the following inequalities. Show work and graph the solutions on the given number lines.

a. $-5x - 2 < 13$

$+2 \quad +2$

$\frac{-5x}{-5} < \frac{15}{-5}$ switch sign!

$x > -3$

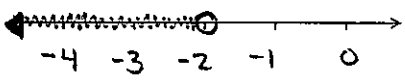


b. $4x + 2 < -6$

$-2 \quad -2$

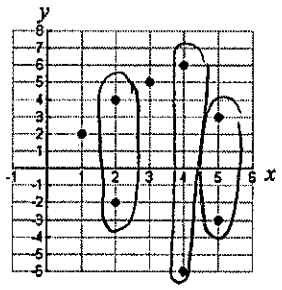
$\frac{4x}{4} < \frac{-8}{4}$

$x < -2$



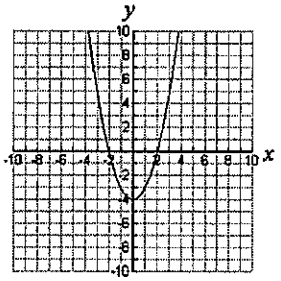
6. Determine if each graph is a function. Explain.

a.



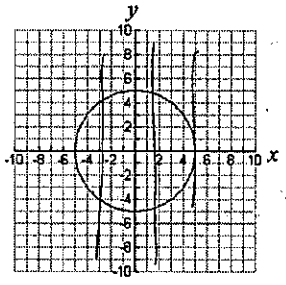
No! There are 3 x values that have more than 1 y.

b.



Yes!

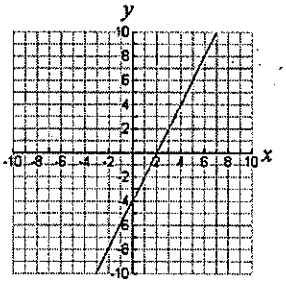
c.



NO!

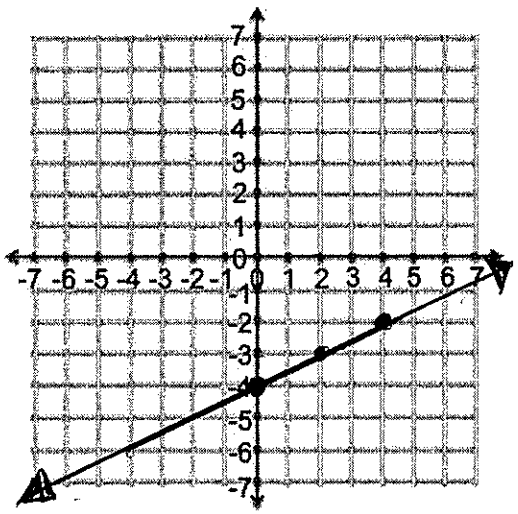
doesn't pass vertical line test

d.



Yes! linear

7. Graph $y = \frac{1}{2}x - 4$



Slope: $\frac{1}{2}$

y-int: $(0, -4)$

8. Find the slope of the line through $(7, 12)$ and $(4, -9)$.

$x_1\ y_1 \quad x_2\ y_2$

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $\quad \frac{-9 - 12}{4 - 7} = \frac{-21}{-3} = \boxed{7}$

9. Given the line $y = 3x + 5$,

a. Identify the slope. $\boxed{m = 3}$

b. Identify the y-intercept $\boxed{(0, 5)}$

10. Write an equation of a line that has a slope of 2 and a y-intercept of 7.

$y = 2x + 7$

11. Write an equation of a line that has a slope of 3 and contains (4, 6).

Point-Slope

$y - 6 = 3(x - 4)$

$y - 6 = 3x - 12$

$+6 \qquad +6$

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

Solve for b

$y = 3x + b$

$6 = 3(4) + b$

$6 = 12 + b$

$b = -6$

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

12. Write an equation of a line that contains (1, 4) and (2, 7).

$x_1\ y_1 \quad x_2 y_2$

$m = \dfrac{y_2 - y_1}{x_2 - x_1}$

$m = \dfrac{7 - 4}{2 - 1} = \dfrac{3}{1} = 3$

$y - 4 = 3(x - 1)$

$y - 4 = 3x - 3$

$\boxed{y = 3x + 1}$

– or –

$y = 3x + b$

$4 = 3(1) + b$

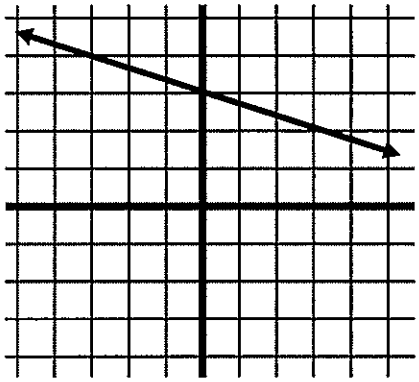
$4 = 3 + b$

$b = 1$

$\boxed{y = 3x + 1}$

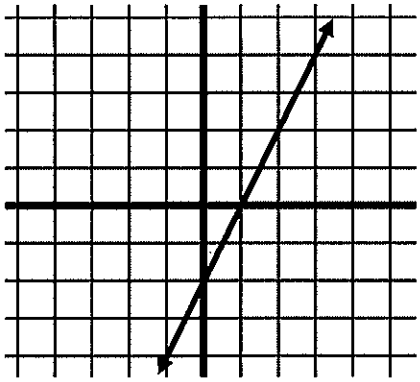
13. Write an equation of a line in slope intercept form for the lines graphed below.

a.



Equation: $y = -\frac{1}{3}x + 3$

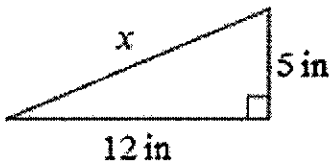
b.



Equation: $y = 2x - 2$

14. Find the missing side of the triangle using the Pythagorean Theorem.

a.



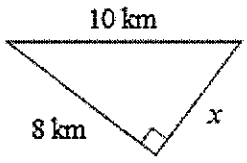
$12^2 + 5^2 = x^2$

$144 + 25 = x^2$

$\sqrt{169} = \sqrt{x^2}$

$\boxed{x = 13}$

b.



$x^2 + 8^2 = 10^2$

$x^2 + 64 = 100$

$\sqrt{x^2} = \sqrt{36}$

$\boxed{x = 6}$