Advanced Algebra 2 with Trig --- Prerequisite

1. Simplify: $b^7\left(4b^{-3}\right)^{-2}$

$b^7\left(\frac{1}{16}b^6\right) = \boxed{\frac{b^{13}}{16}}$

2. Solve the formula for c,

$A(b+c)=bc$

$Ab+Ac=bc$

$Ac-bc=-Ab$

$c(A-b)=-Ab$

$\boxed{c=-\frac{Ab}{A-b}}$

3. Solve and express your answer in interval notation: $5(x-2)\geq 8(x-1)$

$5x-10\geq 8x-8$

$-2\geq 3x \qquad -\frac{2}{3}\geq x$

$\boxed{(-\infty, -\frac{2}{3}]}$

4. Solve and express your answer in set notation: $3\leq\frac{3}{5}x+6\leq 7$

$-3\leq\frac{3}{5}x\leq 1 \qquad -5\leq x\leq\frac{5}{3}$

$\boxed{\{x\in\mathbb{R} \mid -5\leq x\leq 5/3\}}$

5. Solve: $p^2-3p-54=0$

$(p-9)(p+6)=0 \qquad p=\boxed{9,-6}$

6. Factor: ~~$16x^2+8x+1$~~

$\boxed{(4x+1)^2}$

7. Factor: $4x^2-9y^2$

$\boxed{(2x-3y)(2x+3y)}$

8. Find the midpoint of the line segment joining the points R(-2,1) and S(5,6).

$\left(\frac{3}{2}, \frac{7}{2}\right)$

9. Use the given information to completely fill in all 4 parts in the table.

Equation in point slope form:

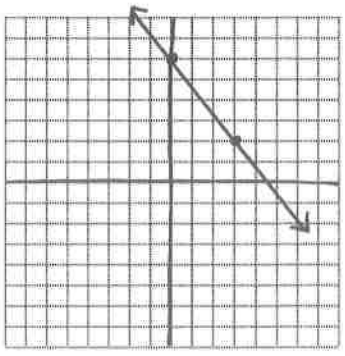
$m=\frac{10-2}{-3-3}=\frac{8}{-6}=-\frac{4}{3}$

$\boxed{y-10=-\frac{4}{3}(x+3)}$

Table

x	y
-3	10
0	6
3	2
6	-2

Graph:



$0-10=-\frac{4}{3}(x+3)$

$\frac{15}{2}=(x+3)$

$\frac{9}{2}=x$

Description:

Slope: $-\frac{4}{3}$

y-intercept: $(0,6)$

x-intercept: $(4.5,0)$

$y=0$

Circle One of the following:

Vertical Horizontal (Neither)

10. Farmer Ali had a well on his property 200 feet deep. When the well went dry, he hired a company to drill the well deeper. He used the equation $d = -75t - 200$ to find the depth of the well,d, using the number of days the company drilled, t. What is slope of the line and what does it represent in the context of the problem?

$m = -75$
rate of change of the depth of the well in ft/day.
so drilled down 75 ft per day

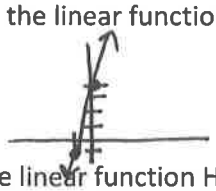
11. Write an equation of the line through the points (8,5) and (10,12) in slope-intercept form and in point-slope form. $m = \frac{12-5}{10-8} = \frac{7}{2}$ point slope: $y - 5 = \frac{7}{2}(x-8)$

y-int: $y - 5 = 7/2(0-8)$ slope intercept: $y = \frac{7}{2}x - 23$

12. True or false: If the average rate of change of a linear function if 4/5 then, if y increases by 5, x will increase by 4.

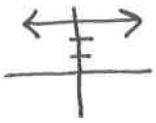
F : if y increases by 4, x will increase by 5

13. Graph the linear function $g(x) = 5x + 4$



14. For the linear function H(x)=3, answer the following questions.

a. Determine the slope and y-intercept. $m = 0$ $y\text{-int} = 3$
b. Graph the function.
c. Determine the average rate of change of the function.



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15. Find an equation of the line through (1,5) that is parallel to 9x-y=1.

$y - 5 = 9(x-1)$

$y = 9x - 1$
$m = 9$

16. Find an equation of the line through (-12,2) that is perpendicular to y= -13.

$x = -12$

17. Find an equation of the perpendicular bisector of the line segment whose endpoints are (4,5) and (-6,9).

$m = \frac{9-5}{-6-4} = \frac{4}{-10} = -\frac{2}{5} \longrightarrow m = \frac{5}{2}$

midpt: $(-1, 7)$

$y - 7 = \frac{5}{2}(x+1)$