Name: Key Due Monday, March 26th

30 WEEK TEST REVIEW PACKET

The following problems can be solved by using the knowledge in your brain and, if needed, your notes and these links can help you as well. This document will be uploaded onto my website so that you can copy and paste the links in case you don't feel like typing them out. Show all work. This is due on ~~4/19/2017~~ 3/26

My website: https://www.mscolemaritime.weebly.com/foundations

For #1-5, solve the equations. (Notes #7-9)

This video may help you: https://www.youtube.com/watch?v=fDMxOiS5g7k

1. $x + 11 + 8x = 29$

$9x + 11 = 29$ CLT

$-11 \quad -11$ A.In.

$\frac{9x}{9} = \frac{18}{9}$ M.In.

$x = 2$ A.In.

2. $\frac{x}{4} + 3 = 19$

$-3 \quad -3$

$4 \cdot \frac{x}{4} = 16 \cdot 4$ M.In.

$x = 64$

3. $2(x + 3) + 7x = 96$

$2x + 6 + 7x = 96$ dist. prop.

$9x + 6 = 96$ CLT

$-6 \quad -6$ A.In.

$\frac{9x}{9} = \frac{90}{9}$ M.In.

$x = 10$

4. $6x - 3 = 2x + 13$

$-2x \quad -2x$ A.In.

$4x - 3 = 13$ A.In.

$+3 \quad +3$ M.In.

$\frac{4x}{4} = \frac{16}{4}$

$x = 4$

5. $-2(3 - x) = 6 + 5x$

$-6 + 2x = 6 + 5x$ dist. prop.

$-2x \quad -2x$ A.In.

$-6 = 6 + 3x$ A.In.

$-6 \quad -6$

$\frac{-12}{3} = \frac{3x}{3}$ M.In.

$-4 = x \rightarrow x = -4$

For #6-8, solve the inequalities. (Notes #11-14)

This video may help you: https://www.youtube.com/watch?v=t3-2PVR5Ios

6. $7x - 5 \geq 2$

$+5 \quad +5$

$\frac{7x}{7} \geq \frac{7}{7}$

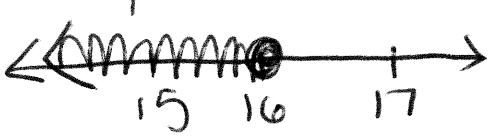
$x \geq 1$

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

$+5 \quad +5$

$\frac{2}{1} \cdot \frac{1}{2}x \leq 8 \cdot \frac{2}{1}$

$x \leq 16$



8. $2(x + 5) - 11x \leq 19$

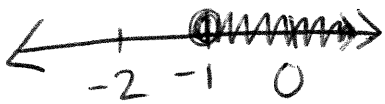
$2x + 10 - 11x \leq 19$

$-9x + 10 \leq 19$

$-10 \quad -10$

$\frac{-9x}{-9} \leq \frac{9}{-9}$

$x \geq -1$



For #8-9, solve the compound inequalities. (Notes #17-18)
This video may help you: https://www.youtube.com/watch?v=A3xPhzs-KBI

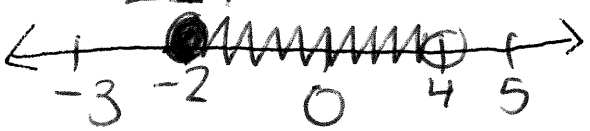
9. $-16 \leq 5x - 6 < 14$

$+6 \quad +6 \quad +6$

$-10 \leq 5x < 20$

$\frac{}{5} \quad \frac{}{5} \quad \frac{}{5}$

$-2 \leq x < 4$



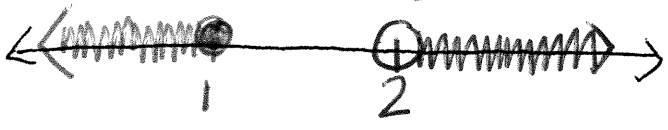
10. $-3x - 4 < -10$ or $2x + 7 \leq 9$

$+4 \quad +4$ | $-7 \quad -7$

$-3x < -6$ | $2x \leq 2$

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

$x > 2$ OR $x \leq 1$



For #11, find the slope of the line. (Notes #31-32)
This video may help you: https://www.youtube.com/watch?v=1Cm7hjMUsrQ

11. What is the slope of the line that passes through the points (4, 4) and (7, −2)?

$x_1 \; y_1 \quad x_2 \; y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2-4}{7-4} = \frac{-6}{3} = \boxed{\frac{-2}{1} = m}$$

For #12, write the equation of the line given the slope and the y-intercept. (Notes #34)
This video may help you: https://www.youtube.com/watch?v=fr9w7PCxDGE

12. Write the equation of the line that has a slope of −2 and a y-intercept of 7.

$y = mx + b$ (m: slope, b: y-intercept)

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

For #13, write the equation of the line given the slope and a point. (Notes #34)
This video may help you: https://www.youtube.com/watch?v=MxiqyE2uMCo

13. Write the equation of the line that has a slope of $\frac{1}{2}$ and passes through the point (6, −3).

$x \; y$

$y = mx + b$ ($m = \frac{1}{2}$)

$-3 = \frac{1}{2}(6) + b$

$-3 = 3 + b$

$-3 \quad -3$

$b = -6$

$y = mx + b$

$\boxed{y = \frac{1}{2}x - 6}$

For #14, write the equation of the line given two points. (Notes #35)
This video may help you: https://www.youtube.com/watch?v=3t7E8PTfey0&t=31s

14. Write the equation of the line that passes through the points (4, 9) and (−2, 6)

$x_1 \; y_1 \quad x_2 \; y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6-9}{-2-4} = \frac{-3}{-6} = \boxed{\frac{1}{2} = m}$$

$y = mx + b$

$9 = \frac{1}{2}(4) + b$

$9 = 2 + b$

$-2 \quad -2$

$y = mx + b$

$\boxed{y = \frac{1}{2}x + 7}$

For #15, graph the equation on the given coordinate plane. (Notes #32)
This video may help you: https://www.youtube.com/watch?v=xyVJZKu7Euw

15. $y + \frac{1}{3}x = -4$

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

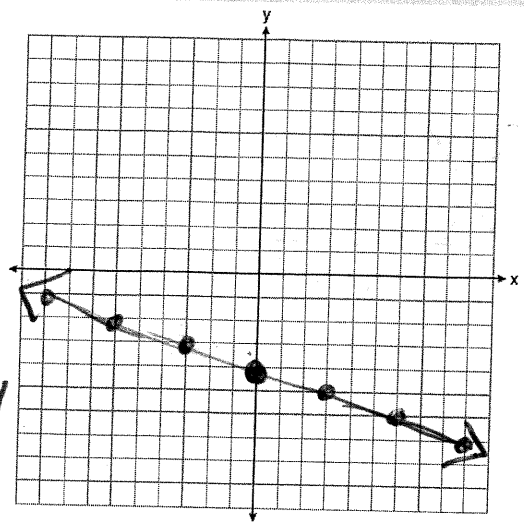
$y = -4 - \frac{1}{3}x$

or

$y = -\frac{1}{3}x - 4$

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

$b = -4$



For #16, graph the inequality and name a point in the solution. (Notes #42)
This video may help you: https://www.youtube.com/watch?v=P_-c9D6mjGA

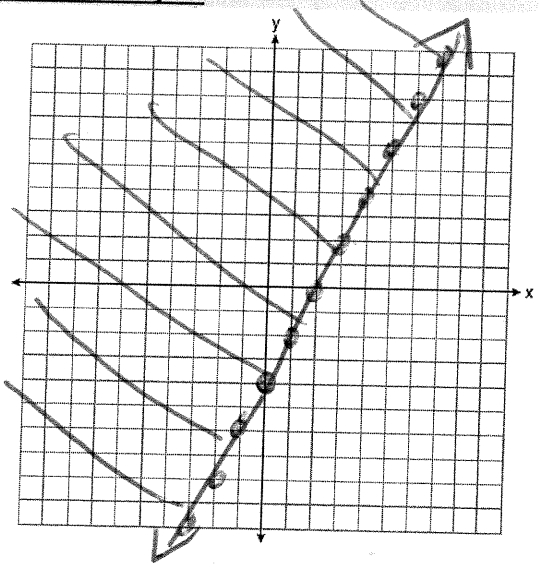
16. $3y \geq 6x - 12$

$\frac{3y}{3} \geq \frac{6x}{3} - \frac{12}{3}$

$y \geq 2x - 4$

Solid, Shade above

$m = \frac{2}{1}$ $b = -4$



For #17, solve this system of equations using *substitution:* (Notes #44)
This video may help you: https://www.youtube.com/watch?v=kf-o_CcTKH8

17. $\begin{cases} 4x + 2y = 10 \\ y - x = -13 \end{cases}$

$+x \quad +x$

$y = -13 + x$

y is "$-13+x$"

$y = -13 + 6$

$y = -7$

$(6, -7)$

$4x + 2(-13 + x) = 10$

$4x - 26 + 2x = 10$

$6x - 26 = 10$

$+26 \quad +26$

$\frac{6x}{6} = \frac{36}{6}$

$x = 6$

For #18, solve this system of equations using *elimination:* (Notes #46)
This video may help you: https://www.youtube.com/watch?v=8kRG7jlBMAY&t=831s

18. $\begin{cases} 8x - 6y = -20 \\ -16x + 7y = 30 \end{cases}$

$16x - 12y = -40$
$-16x + 7y = 30$
$-5y = -10$
$\frac{-5y}{-5} = \frac{-10}{-5}$
$y = 2$

$8x - 6(2) = -20$
$8x - 12 = -20$
$+12 \quad +12$
$\frac{8x}{8} = \frac{-8}{8}$
$x = -1$
$(-1, 2)$

For #19, graph the following system of equations and name a point in the solution set. (Notes #43)
This video may help you: https://www.youtube.com/watch?v=CA4S7S-3Lg4

19. $\begin{cases} y - 3x > -4 \\ 2y + x \leq 4 \end{cases}$

$y - 3x > -4$
$+3x \quad +3x$
$y > -4 + 3x$

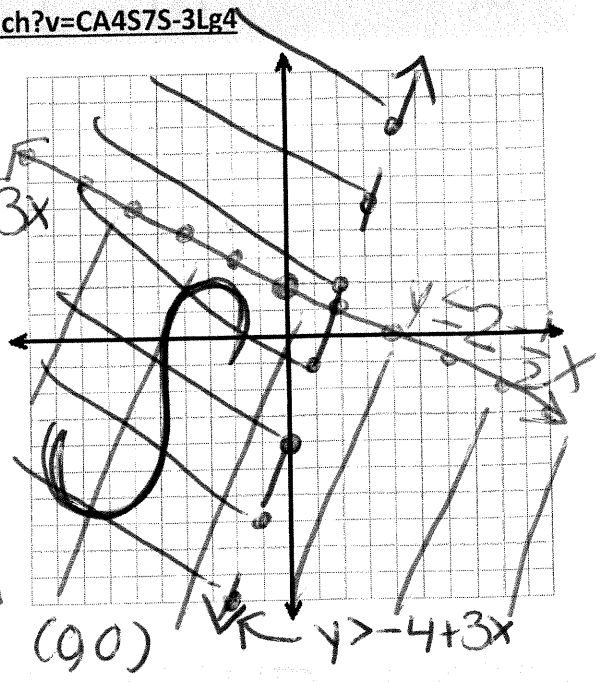
dashed, above

$m = \frac{3}{1}$
$b = -4$

$2y + x \leq 4$
$-x \quad -x$
$\frac{2y}{2} \leq \frac{4 - x}{2}$
$y \leq 2 - \frac{1}{2}x$

solid, below

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



For #20, write the *explicit* rule for sequence. (Notes 53)
This video may help you: https://www.youtube.com/watch?v=2PlHWfvJUHw (at 6:03)

20. 2, 8, 14, 20, ...
+6 +6 +6

$d = 6 \quad a_1 = 2$
$a_n = 2 + 6(n-1)$

$a_n = a_1 \cdot r^{n-1}$
$a_n = a_1 + d(n-1)$

For #21, use the formula to solve the exponential decay problem. (Notes #59)
This video may help you: https://www.youtube.com/watch?v=Wt4KJfBwSmI

21. A computer valued at $1500 depreciates at a rate of 20% each year. Find the value of the computer after 3 years.

$a = 1500$
$r = 20\% \rightarrow .20$
$x = 3$

$y = a(1-r)^x$
$y = 1500(1 - .20)^3$
$y = \$768$

For #22, use the correct formula to solve the compound interest problem. (Notes #57)
This video may help you: https://www.youtube.com/watch?v=WgTN3hQuMEA

22. You are going to take out a $15,000 loan with a 4% interest rate compounded monthly. How much money will you owe the bank if you wait 5 years to pay back your loan? $n=12$

$P=15{,}000$

$r=4\% \rightarrow .04$

$n=12$

$t=5$

$A=P\left(1+\frac{r}{n}\right)^{n\cdot t}$

$A=15000\left(1+\frac{.04}{12}\right)^{12\cdot 5}$

$A=\$18314.95$

For #23, subtract the polynomials. (Notes #69)
This video may help you: https://www.youtube.com/watch?v=XARL5uvZYKc (at 1:45)

23. When $2x^2-5x+8$ is subtracted from $6x^2+3x-2$ the result is...

$(6x^2+3x-2)-(2x^2-5x+8)$

$6x^2+3x-2-2x^2+5x-8$

$4x^2+8x-10$

#24, find the sum. (Notes #68)
This video may help you: https://www.youtube.com/watch?v=ahdKdxsTj8E

24. Simplify: $(3x^2+x+8)+(x^2-9)$

$4x^2+x-1$

For #25, find the product. (Notes #72-73)
This video may help you: https://www.youtube.com/watch?v=OdxkhmZgKyw

25. Simplify: $(2x^2+5x+1)(x^2-3)$

	x^2	-3
$2x^2$	$2x^4$	$-6x^2$
$+5x$	$5x^3$	$-15x^1$
$+1$	$1x^2$	-3

$2x^4+5x^3-5x^2-15x^1-3$

$(2x^2+5x^1+1)(x^2-3)$

$2x^4-6x^2+5x^3-15x^1+1x^2-3$

$2x^4+5x^3-5x^2-15x^1-3$