HON ALG 2   Name:

Work over Break:

1. Do only circled problems on the attached sheets

2. IF you currently have a grade of c- or below you can do any missing work and prepare for a retake over any test or quiz to be done the week of school when we return (Jan 9).

3. This packet will be worth 20 summative points [included in Quizzes category]

Solve each formula for the indicated variable.

1. $V = \frac{\pi}{3} r^2 h$, for h

2. $S = L(1 - r)$, for r

3. $S = \ell w + wh + \ell h$, for w

Solve for x. State any restrictions on the variables.

4. $\frac{4}{9}(x + 3) = g$

5. $a(x + c) = b(x - c)$

6. $\frac{x + 3}{t} = t^2$

7. Two brothers are saving money to buy tickets to a concert. Their combined savings is $55. One brother has $15 more than the other. How much has each saved?

8. The sides of a triangle are in the ratio 5 : 12 : 13. What is the length of each side of the triangle if the perimeter of the triangle is 15 in.?

9. Find three consecutive numbers whose sum is 126.

Solve each equation.

10. $\frac{1}{2}(x - 3) + \left(\frac{3}{2} - x\right) = 5x$

11. $5w + 8 - 12w = 16 - 15w$

12. $7y + 5 = 6y + 11$

13. $1.2(x + 5) = 1.6(2x + 5)$

14. $t - 3\left(t + \frac{4}{3}\right) = 2t + 3$

15. $0.5(c + 2.8) - c = 0.6c + 0.3$

16. $3(x + 1) = 2(x + 11)$

17. $\frac{u}{5} + \frac{u}{10} - \frac{u}{6} = 1$

Solve each inequality. Graph the solutions.

1. $16 - 4t \leq 36$

2. $2(m + 3) + 1 > 23$

3. $7 + 13(x + 1) \leq 3x$

4. $-6a < 21$

5. $\frac{2}{3}(4x + 5) > \frac{9}{4}x$

6. $2[5x - (3x - 4)] < 3(2x + 3)$

7. $8(x - 5) \geq 56$

8. $6 - x \leq 7x + 3$

9. $10 - x \geq -2(3 + x)$

Solve each compound inequality. Graph the solutions.

10. $-9 \leq 4x + 3 \leq 11$

11. $16x \leq 32$ or $-5x < -40$

12. $9x < 54$ and $-4x < 12$

13. $6(x + 2) \geq 24$ or $5x + 10 \leq 15$

14. $14 > 3x - 1 \geq -10$

15. $4 < 1 - 3x \leq 7$

16. $2(x - 1) < -4$ or $2(x - 1) > 4$

17. $3x - 5 \geq -8$ and $3x - 5 \leq 1$

Solve each inequality. Graph the solutions.

4. $|x + 5| > 12$

5. $|k - 3| \le 19$

6. $|x + 2| \ge 0$

7. $2|t - 5| < 14$

8. $|3x - 2| + 7 \ge 11$

9. $5|2b + 1| - 3 \le 7$

10. $|2 - 3w| \ge 4$

11. $-3|7m - 8| < 5$

12. $|2u| > 6$

Solve each equation. Check for extraneous solutions.

13. $|4x| = 28$

14. $|3x + 6| = -12$

15. $|z - 1| = 7z - 13$

16. $|s + 12| = 15$

17. $|-3x| = 63$

18. $2|5x + 3| = 16$

19. $|6x + 7| = 5x + 2$

20. $|7r - 4| = 24$

21. $|3c| + 2 = 11$

22. $5|x + 1| + 6 = 21$

23. $|3x + 5| - 2x = 3x + 4$

24. $-|d + 2| = 7$

Write in point-slope form the equation of the line through each pair of points.

9. $(0, 1)$ and $(3, 0)$

10. $\left(\frac{1}{2}, \frac{2}{3}\right)$ and $\left(-\frac{3}{2}, \frac{5}{3}\right)$

11. $(-3, -2)$ and $(1, 6)$

Write an equation for each line. Then graph the line.

22. through $(-1, 3)$ and parallel to $y = 2x + 1$

23. through $(2, 2)$ and perpendicular to $y = -\frac{3}{5}x + 2$

24. through $(-3, 4)$ and vertical

25. through $(4, 1)$ and horizontal

10. Suppose your drama club is planning a production that will cost $525 for the set and $150 per performance. A sold-out performance will bring in $325. Write an equation for the cost C and an equation for the income I for p sold-out performances. Find how many sold-out performances will make the cost equal to the income.

20. Suppose you bought eight oranges and one grapefruit for a total of $4.60. Later that day, you bought six oranges and three grapefruits for a total of $4.80. Now you want to find the price of each orange and of each grapefruit. Write an equation for each purchase. Solve the system of equations.

Solve each system.

21. $\begin{cases} y = x + 3 \\ 5x + y = 9 \end{cases}$

22. $\begin{cases} 5x + 4y = 2 \\ 5x - 2y = 4 \end{cases}$

23. $\begin{cases} y = 2x + 3 \\ 5x - y = -3 \end{cases}$

24. $\begin{cases} 14x + 2y = 10 \\ x - 5y = 11 \end{cases}$

25. $\begin{cases} x + 5y = 1 \\ 2x = 2 - 10y \end{cases}$

26. $\begin{cases} 0.3x + 0.4y = 0.8 \\ 0.7x - 0.8y = -6.8 \end{cases}$

11. Suppose you make and sell skin lotion. A quart of regular skin lotion contains 2 c oil and 1 c cocoa butter. A quart of extra-rich skin lotion contains 1 c oil and 2 c cocoa butter. You will make a profit of $10/qt on regular lotion and a profit of $8/qt on extra-rich lotion. You have 24 c oil and 18 c cocoa butter.
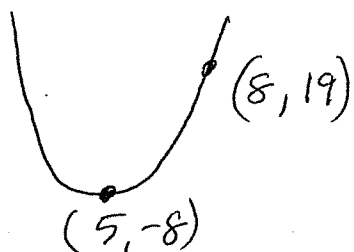
   a. How many quarts of each type of lotion should you make to maximize your profit?

   b. What is the maximum profit?

WRITE AND GRAPH A SYSTEM OF INEQUALITIES & USE THE CORNERS OF THE SOLUTION REGION TO ANSWER PARTS a. & b.
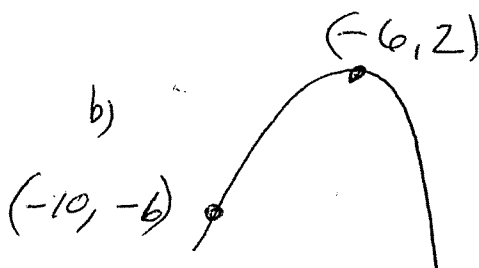
SEC 5-3

① WRITE THE EQUATION OF EACH PARABOLA IN VERTEX FORM.

a)

$(8, 19)$

$(5, -8)$

b)

$(-6, 2)$

$(-10, -6)$

Sec 5-5

② Solve each equation by factoring or Sq. Roots → EXACT SOLUTIONS!

a) $8x^2 - 6x + 1 = 0$

b) $5(x+6)^2 - 9 = 51$

c) $2(x-3)^2 + 142 = 78$

d) $12x^2 + 16x = 24$

Sec 5-7 solve each equation by Completing the square. Give EXACT SOLUTIONS

③ a) $x^2 - 8x + 3 = 0$

b) $3x^2 + 18x + 99 = C$

c) $x^2 + 10x + 73 = 0$