

Name _____

Advanced Algebra (H) Special Functions and Review Work You Would Never Ask For

1. Solve : $5y - [7 - (2y - 1)] = 3(y - 5) + 4(y + 3)$
2. Solve: $\frac{1}{2}(6 + 4x) - \frac{1}{4}(8x - 12) = \frac{1}{2}(2x - 4)$
3. Find four consecutive even integers such that the product of the first and fourth is equal to the square of the second.
4. Adam made a trip to see his friend in college. The college is 295 miles from Adam's house. He averaged 50 mi/h for most of the trip but only 40 mi/h for the part where the road was under construction. If the trip took 6 hours, how many miles of the road were under construction?
5. Eve opened her purse and found dimes, quarters and nickels with a total value of \$1.90. There are twice as many dimes as quarters and half as many nickels as quarters. How many coins of each type did Eve have in her purse?
6. Solve for x: $\frac{3ax}{5} - 4c = \frac{ax}{5} + 2c$
7. Solve for x: $a(3x - 2b) = c(dx - 2)$
8. Solve: $\frac{3}{5}(x - 12) > x - 24$
9. Solve: $3[4x - (2x - 7)] < 2(3x - 5)$
10. The sum of the measures of any two sides of a triangle is always greater than the measure of the third side. In a triangle ABC, $BC = 4$ and $AC = 8 - AB$. What can be said about the measure of side AB?
11. The Speedy Car Rental Company rents a car for \$12.95 per day plus 15 cents per mile. Your company has limited you to a daily budget of \$90. What is the maximum number of miles that you can drive each day?
12. Solve: $17 > 4x - 3 > -15$
13. Solve and graph: $.3 - .7z > .4z - 3$ and $3(z - 2) - 6 \leq 15$

14. Solve and Graph: $3(2w - 7) + 7 \leq 10$ or $7 + w > -3$

15. Graph: $y = [x - 2]$

16. Solve and Graph: $\frac{y}{5} - 1 > 6$ or $\frac{y}{2} + 4 < 8$

17. Solve and Graph: $3(z - 2) - 5 > 8 - 2(z - 4)$ and $1 - 2z > 10$

18. Solve and Graph: $\frac{|x-3|}{2} + 2 < 6$

19. Solve and Graph: $5 < |x + 3| \leq 7$

20. Graph: $x = [y + 1]$. Is this a function?

21. Solve and Graph: $0 \leq |1 - x| < 8$

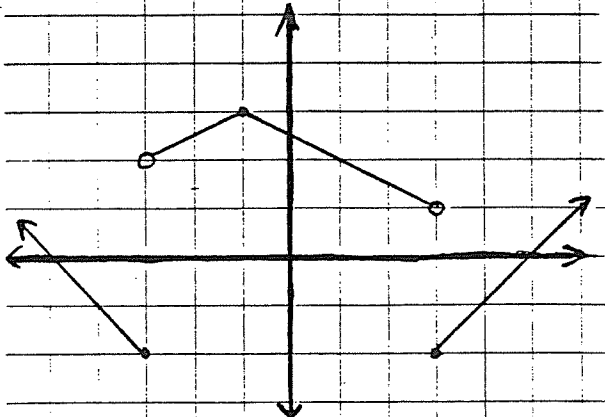
22. Solve and Graph: $|x + 5| \leq 3x - 2$

23. The fuel efficiency rating for a certain car is 28 mi/gal on the highway and 20 mi/gal in the city. During one week the car traveled 220 miles and used 9 gallons of fuel. How much fuel was used for city driving? How many miles were driven on the highway?

24. A cylinder with height 15 has a total surface area that is twice the area of a circle whose radius is 6 more than the radius of the cylinder. What is the radius of the cylinder?

25. Graph: $f(x) = \begin{cases} |x|, & x < -3 \\ 2x + 3, & -3 \leq x \leq 5 \\ x + 1, & x > 5 \end{cases}$

26. Write the equation of the split function below:



$f(x) = \left\{ \right.$

27. Graph the following:

$y = |x - 4| + 2$

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

a) what is the vertex of each?

28. In the general form

$y = a|x - h| + k$,

How does each value affect the graph of an absolute value function?

KEY

1) \emptyset

2) $x = 8$

3) $x = 2$

4) 20 miles

5) $n = 2, d = 8, q = 4$

6) $x = \frac{15c}{a}$

7) $x = \frac{2(ab-c)}{3at-cd}$

8) $x < 78$

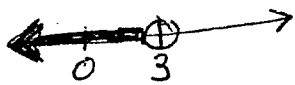
9) \emptyset

10) $2 < AB < 6$

11) $513 \frac{2}{3}$ mi

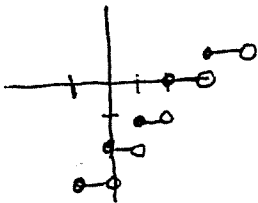
12) $-3 < x < 5$

13) $z < 3$ and $z \leq 9 \Rightarrow \underline{z < 3}$

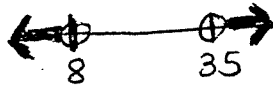


14) \mathbb{R}^2 ($w \leq 4$ or $w > -10$)

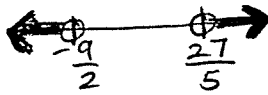
15)



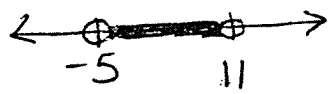
16) $y > 35$ or $y < 8$



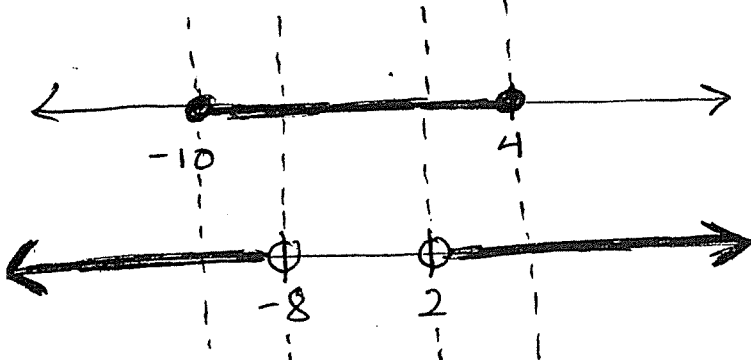
17) \emptyset ($z > \frac{27}{5}$ and $z < -\frac{9}{2}$)



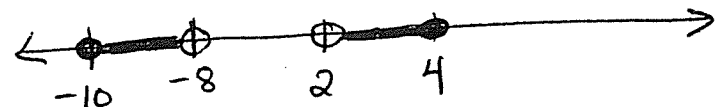
18) $-5 < x < 11$



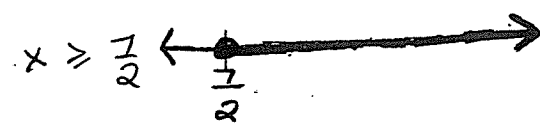
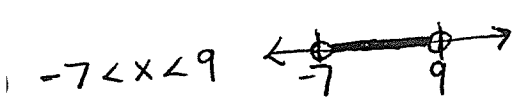
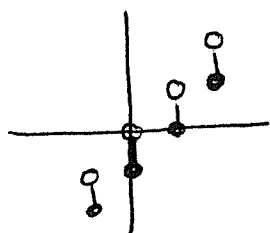
1) $-10 \leq x \leq 7$ and $(x < 2 \text{ or } x > 4)$



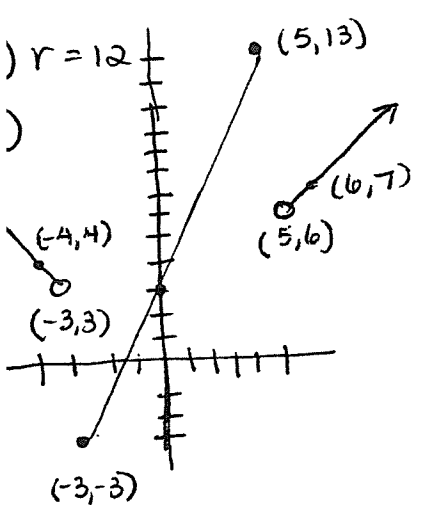
final answer:



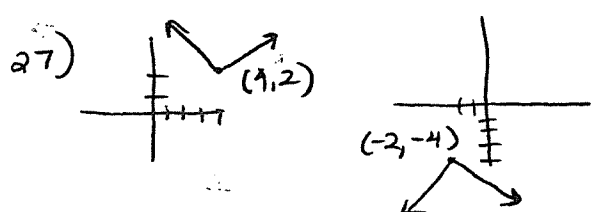
$$-10 \leq x < -8 \text{ and } 2 < x \leq 4$$



4 gallons on city ; 140 miles on highway



$$26) f(x) = \begin{cases} -(x+5) & x \leq -3 \\ -\frac{1}{2}|x+1| + 3 & -3 < x < 3 \\ x-5 & x \geq 3 \end{cases}$$



28) $a \Rightarrow$ makes graph wide or narrow
 $h \Rightarrow$ shifts graph left or right
 $k \Rightarrow$ shifts graph up+down