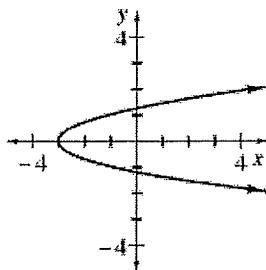


Evaluate each function:

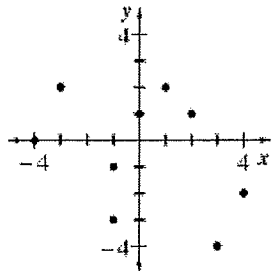
- 1) $k(t) = -3t^2 - 2t$; Find $k(-2)$ -8 2) $h(x) = 3 \cdot 2^{-x-1}$; Find $h(1)$ $\frac{3}{4}$
 3) $w(n) = -2 \cdot 2^n$; Find $w(0)$ -2 4) $p(x) = 3|x-2| + 2$; Find $p(-5)$ 23

Which of the following represent a function? Explain. * To be a function each input (x) must have only one output (y).

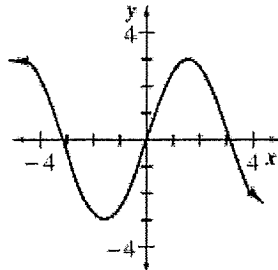
5) Not a function



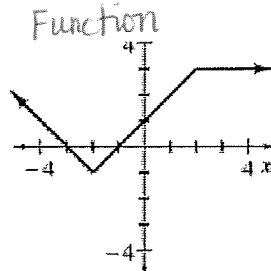
6) Not a function



7) Function



8) Function



9)

Input (x)	3	-1	2	0	1	2	9
Output (f(x))	4	-5	-8	7	4	-8	2

Function

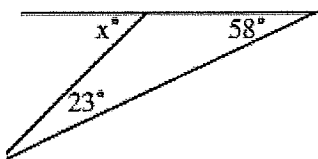
10)

Input (x)	4	7	45	52	7	13
Output (f(x))	8	8	7	-6	9	0

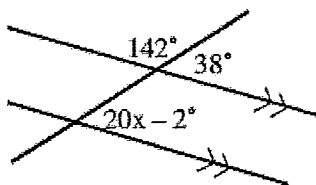
Not a function

Use geometric properties and theorems to solve for x in each diagram and write the property or theorem you use in each case.

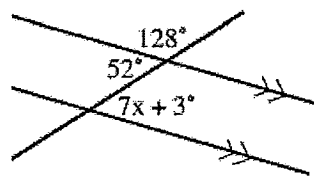
11) $x = 81^\circ$



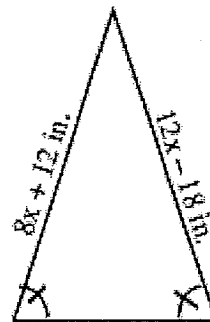
12) $x = 2^\circ$



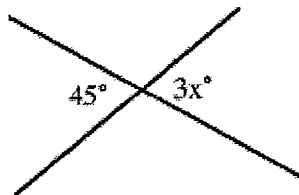
13) $x = 7^\circ$



14) $x = 7.5$



15)



$x = 15^\circ$

Simplify each expression. Your answer should contain no parentheses or negative exponents.

16) $\frac{14a^3b^2}{21a^4b} \cdot \frac{2b}{3a}$

17) $\frac{4x^{18}}{(2x^{22})^0} \cdot 4x^{18}$

18) $(3w^{-2})^4 \cdot \frac{81}{w^8}$

Solve each equation by first rewriting the expressions in each part with the same base.

19) $9^2 = 3^{2x+1}$
 $x = \frac{3}{2}$

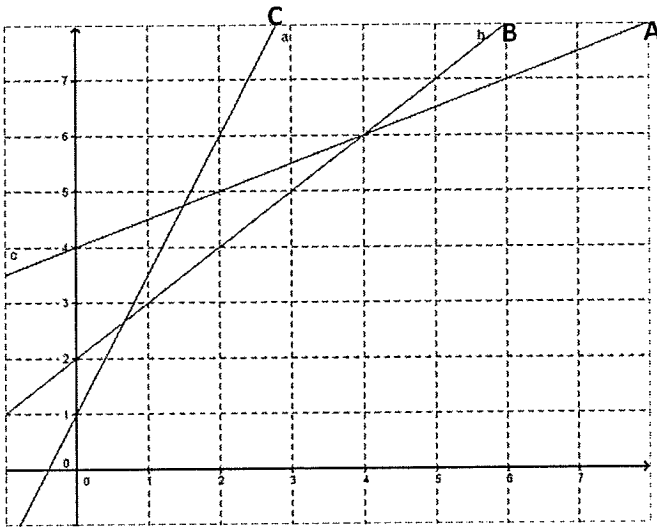
20) $4^{2x} = \left(\frac{1}{2}\right)^{x+5}$
 $x = -1$

Simplify.

21) $\sqrt[3]{125}$
 5

22) $\sqrt[3]{-27}$
 -3

23) $\sqrt[4]{16}$
 2



For problems 24 & 25, refer to the graph above.

- 24) Which of the lines above have the largest starting point? **A**
 25) Which of the lines above have the largest rate of growth? **C**

26) Determine whether each of the following points lie on $y = -\frac{1}{2}x + 3$.

- a) $(-4, 1)$ **No** b) $(-2, 4)$ **Yes**

27) Given $2x - 3y = -9$:

- a) Write the equation in slope-intercept form. $y = \frac{2}{3}x + 3$
 b) Write the equation of the line parallel to the given line and passing through $(-3, -5)$. $y = \frac{2}{3}x - 3$
 c) Write the equation of the line perpendicular to the given line and passing through $(-4, 8)$.
 $y = -\frac{3}{2}x + 2$

28) Given $(1, 3)$ and $(8, -1)$:

- a) Find the slope between the 2 points. $-\frac{4}{7}$
 b) Find the distance between the 2 points: $\sqrt{65}$ or ≈ 8.06
 c) Determine the midpoint. $(\frac{9}{2}, 1)$

29) Find the product of each of the following:

a) $(2y-1)(3y+5)$
 $6y^2 + 7y - 5$

b) $(x+2)(x+y-2)$
 $x^2 + xy + 2y - 4$

c) $(2y-3)^2$
 $4y^2 - 12y + 9$

Integrated I Final Exam Review

30)

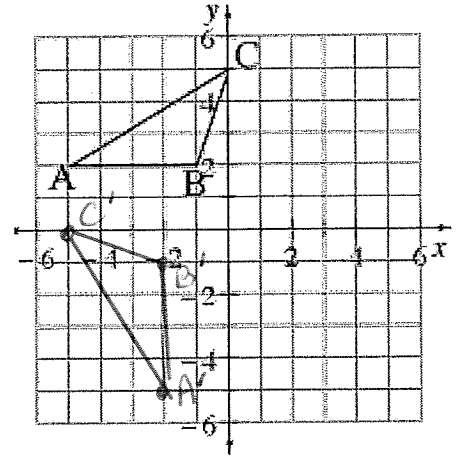
a) Rotate Figure B 90° counterclockwise about the origin to create $\Delta A'B'C'$. What are the coordinates of $\Delta A'B'C'$? $A'(-2, -5)$

b) Find the perimeter and area of ΔABC .

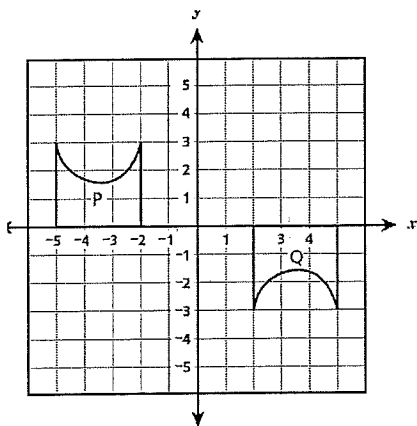
$P \approx 13 \text{ un}$ $A = 6 \text{ un}^2$

c) What is the perimeter and area of $\Delta A'B'C'$?

$P \approx 13 \text{ un}$ $A = 6 \text{ un}^2$



31) What transformation(s) will move figure P onto figure Q?



- ① 180° rotation about the origin or
- ② reflection over y-axis followed by reflection over x-axis or
- ③ reflection over x-axis followed by translation right of 7 units.

32) On graph paper, graph quadrilateral $MNPQ$ if $M(-3, -8)$, $N(2, -10)$, $P(1, -7)$, $Q(-4, -5)$. $MNPQ$ is a parallelogram, which means that it has two pairs of parallel sides.

- a. Show that $MNPQ$ is, indeed, a parallelogram. $\text{slope } QM = -3 = \text{slope } PN$; $\text{slope } QP = -\frac{2}{5} = \text{slope } MN$
- b. Use the function $(x \rightarrow x, y \rightarrow -y)$ to reflect $MNPQ$ across the x-axis, creating $M'N'P'Q'$. What are the coordinates of P' ? $P'(1, 7)$

33) On graph paper, draw ΔABC if $A(2, 4)$, $B(9, 5)$, and $C(4, 10)$.

- a) Verify that $D(3, 7)$ is a midpoint of \overline{AC} .
- b) Write the equation of the line through points D and B . $y = -\frac{1}{3}x + 8$
- c) Is \overline{BD} a height of ΔABC ? Use slope to show that \overline{BD} is perpendicular to \overline{AC} . $\text{slope } \overline{BD} = -\frac{1}{3}$
 $\text{slope } \overline{AC} = 3$
 $\overline{BD} \perp \overline{AC}$
- d) What is the perimeter and area of ΔABC ?
 ≈ 20.5 20

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34) Solve each equation below.

a) $3(m-2) = -2(m-7)$
 $m = 4$

b) $2(x+3) + 5(x-2) = -x + 10$
 $x = 7/4$

c) $|2x-3| + 2 = 11$
 $x = 6, -3$

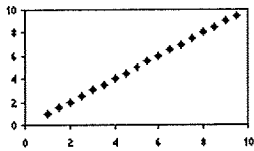
d) $14 + 2|3x+5| = 26$
 $x = 1/3, -11/3$

e) $U = \frac{1}{2}CV^2, \text{ for } V$
 $V = \sqrt{\frac{2U}{C}}$

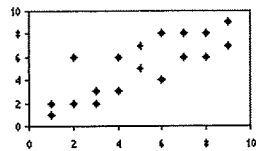
f) $\frac{y}{3} - a = b, \text{ for } y$
 $y = 3(b+a)$

g) $\frac{1}{2}x + \frac{1}{3}x - 7 = \frac{5}{6}x$
 No Solution

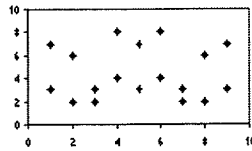
35) Match each graph with an appropriate correlation coefficient.



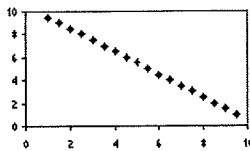
1 → b



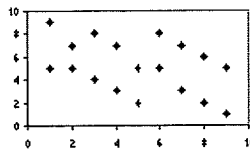
2 → c



3 → d



4 → e



5 → a

a) $r = -0.43$

b) $r = 1$

c) $r = 0.8$

d) $r = 0$

e) $r = -1$

36) Write the equation for an arithmetic sequence in which $t(5) = -9$ and $t(12) = -23$.

$t(n) = -2n + 1$

37) The Cali Taxi Company charges a \$10 flat fee plus \$2.50 per mile for a ride. The Seattle Taxi Company charges a \$15 flat fee plus \$2.00 per ride. Write a system of equations to represent this situation. Remember to define your variable. Under what conditions would you choose The Cali Taxi Company? The Seattle Taxi Company?

Cali: $y = 10 + 2.50x$
 Seattle: $y = 15 + 2.00x$

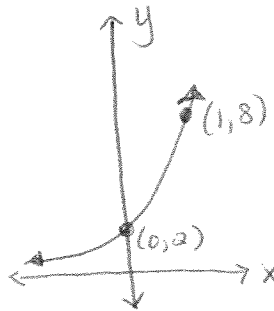
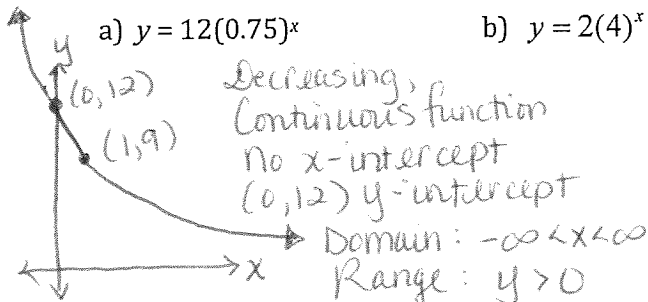
$x = \# \text{ miles}$
 $y = \text{total cost } \$$

Choose Cali if driving less than 10 miles. Choose Seattle if driving more than 10 miles.

38) Graph and fully describe each of the following:

a) $y = 12(0.75)^x$

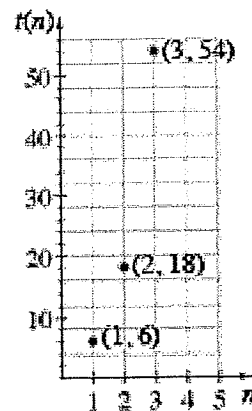
b) $y = 2(4)^x$



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39) Given the graph at right:

- a) What is the multiplier for this sequence? 3
- b) Write an explicit equation for this sequence. $t(n) = 2(3)^n$



40) Given each table determine whether the pattern of growth is linear, exponential, or neither. If linear or exponential, write an equation to represent the sequence.

n	0	1	2	3	4	5
$t(n)$	-14	-9	-4	1	6	11

Linear; $t(n) = 5n - 14$

n	0	1	2	3	4	5
$t(n)$	4	8	16	32	64	128

Exponential; $t(n) = 4(2)^n$

n	0	1	2	3	4	5
$t(n)$	30	20	12	6	2	0

Neither

41) In 2012 the average cost for a new midsize car was about \$31,000. New car prices tend to go up about 2% every year.

- a) What is the multiplier for this situation? 1.02
- b) If this trend continues, what will the cost be in 4 years? $\approx \$33,555$
- c) Write an equation to calculate the cost in n years. What does each of the factors in your equation represent?

$$C(n) = 31,000(1.02)^n$$

Cost in
2012

next year cost will be
102% vs. this year.

42) Write equations to solve each of the following problems.

- a) A brand new Chevy Malibu costs \$25,500. Each year it loses 18% of its value. What will the car be worth when it is 15 years old? $\approx \$1,299$
- b) Each year the population of Geoland increases by 9.8%. The population is currently 12,165,112. What will the population be 20 years from now? $\approx 78,915,609$

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43) Name the most efficient method of solving each system below (equal values, substitution, or elimination). Then, solve the system and describe what your solution represents graphically.

Elimination
 $-4x + 6y = -20$
 a) $2x - 3y = 10$

Equal Values
 $y = 3x + 7$
 b) $y = -4x + 21$

Substitution
 $6x - 2y = 10$
 c) $3x - 2 = y$

Infinitely Many Solutions
 The 2 lines coincide

The 2 lines intersect at (2, 13)

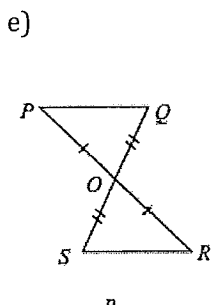
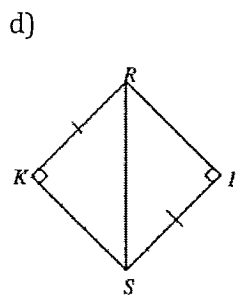
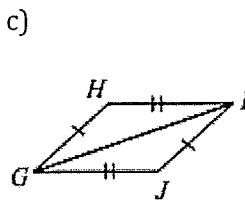
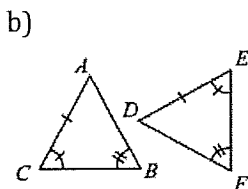
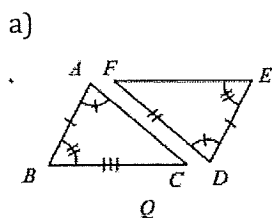
No solution
 The 2 lines are parallel.

44) Write an equation that represents the function in this table.

Week	Weight of Bacterial Culture (g)
1	756.00
2	793.80
3	833.49

$y = 720(1.05)^x$

45) For each of the following, make a flowchart to prove that the pairs of triangles are congruent.



See next page

46) Solve each inequality or system of inequalities and graph the solutions.

a) $-126 \leq -6(5 - 2n)$
 $n \geq -8$

b) $6(k - 6) + 3 > 81$
 $k > 19$

c) $-8|-10 + 5n| \leq -80$
 $n \leq 0, n \geq 4$

d) $9 + |-3 - 4b| < 52$
 $-11.5 < b < 10$

e) $3x + y \geq -5$

47) Riley buys a pair of socks for \$4 a pair and a sweater for \$35. She has \$50. Write an inequality that shows the number of pairs of socks she can buy without spending more than \$50 (assume there is a "tax free" special that day so Riley will not have to pay taxes on her purchase).

$4x + 35 \leq 50$

45.

$\angle A \cong \angle D$
given

$\overline{AB} \cong \overline{DE}$
given

$\angle B \cong \angle E$
given

a)

$\triangle ABC \cong \triangle DEF$
ASA \cong

b)

$\angle B \cong \angle F$
given

$\angle C \cong \angle E$
given

$\overline{AC} \cong \overline{DE}$
given

$\triangle ABC \cong \triangle DEF$
AAS \cong

c)

$\overline{HG} \cong \overline{JI}$
given

$\overline{HI} \cong \overline{JG}$
given

$\overline{GI} \cong \overline{IG}$
reflexive property

$\triangle GHI \cong \triangle IJG$
SSS \cong

d)

$\triangle RKS$ are right $\triangle s$
 $\triangle SIR$
given

$\overline{RK} \cong \overline{SI}$
given

$\overline{RS} \cong \overline{SR}$
reflexive property

$\triangle RKS \cong \triangle SIR$
HL \cong

e)

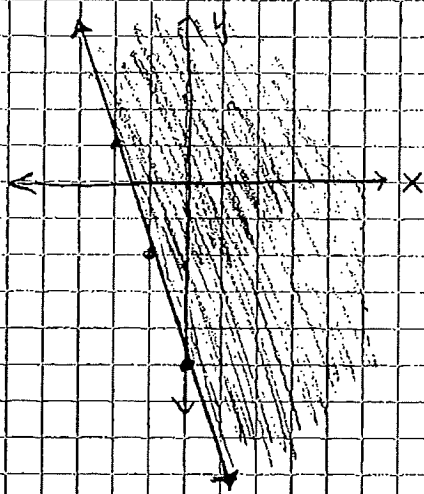
$\overline{PO} \cong \overline{RO}$
given

$m\angle POQ \cong m\angle ROS$
vertical $\angle s$

$\overline{QO} \cong \overline{SO}$
given

$\triangle POQ \cong \triangle ROS$
SAS \cong

e) $3x + y \geq -5$
 $y \geq -3x - 5$



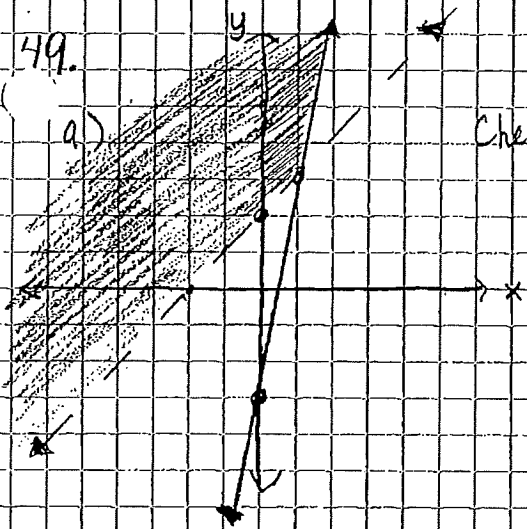
47. $4x + 35 \leq 50$

48. $y < 4x - 1$
 $6x + 2y > 10$

a) $(5, 3)$ $-3 < 20 - 1$ true } Yes it is
 $80 + 6 > 10$ true } a solution

b) $(-1, 13)$ $13 < -5$ false } No, it is
 $-16 + 26 > 10$ false } not a solution

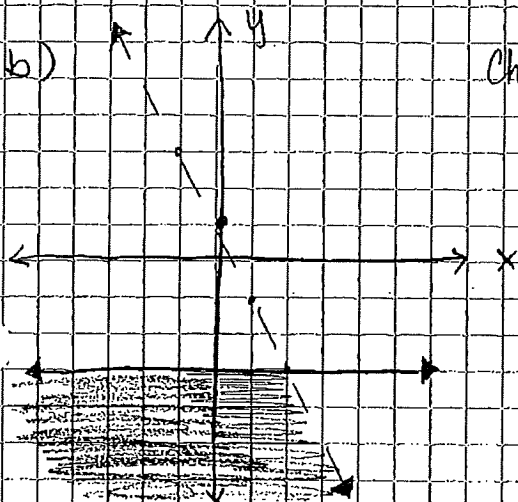
49.



a)

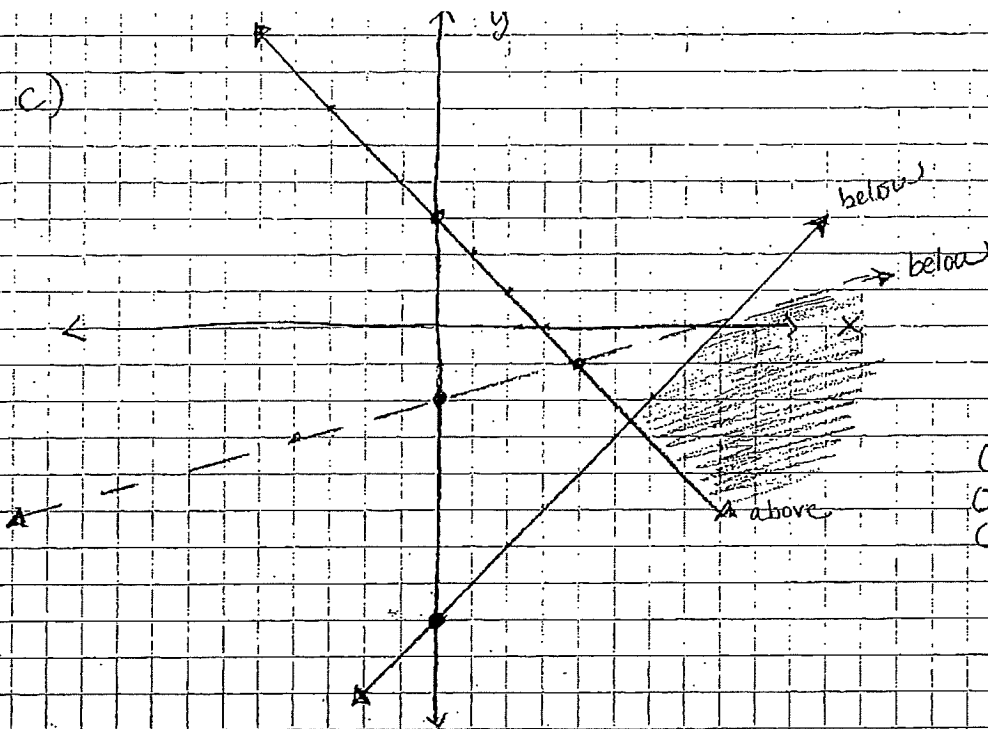
Check: $(0, 3)$ $3 \geq -3$ true
 $3 > 2$ true

b)



Check $(0, -5)$: $-5 < 1$ true
 $-5 \leq -3$ true

c)

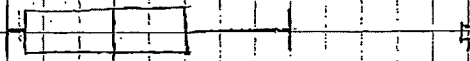


Check (12, 0):

- 0 ≤ -12 + 3 true
- 0 ≤ 3 - 12 true
- 0 ≤ 12 - 8 true

50.

- a) min = 4
 $Q_1 = 5$
 median = 10
 $Q_3 = 14$
 max = 30



0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

- b) mean = 11 Due to the skewed data and outlier, the median is a better measure of center.
- c) IQR = 9 Due to the skewed data and outlier, the IQR is a better measure of spread.
 Std. Dev = 7
- d) Median = 9.5

51.

- a) low = 65 inches high = 72 inches
- b) 50%
- c) 79 inches
- d) 40 adults
- e) Data are symmetric, so either mean or median could be used to describe center and either IQR or Standard Deviation could be used to describe spread.

52.

- a) Moderately strong, positive linear association with no apparent outliers.
- b) $\$14.65$ feet An increase of 1 foot in depth will increase the cost by about $\$14.65$.
- c) To drill 0 feet, it will cost $\$1395$ (set-up cost).
- d) $y = 1395 + 14.65(200) \approx \$4,325$
- e) $R = A + P$ $y = 1395 + 14.65(x)$
 $303 = A - 2567$ ✓
 $\$2930 = A$
- f) Yes, because the residual plot appears to have random scatter, a linear model is appropriate.

53.

- a) Ham & Cheese
- b) Veggie

54. Bacon & Eggs w/ Apple Juice and
Pancakes w/ Apple Juice