○ Guide to 65
□ Guide to 85

Name _____ Date _____
Mr. Schlansky Algebra II

Algebra II Regents Review Test

1. What is the product of $\sqrt[3]{4a^2b^4}$ and $\sqrt[3]{16a^3b^2}$?

1) $4ab^2\sqrt[3]{a^2}$
2) $4a^2b^3\sqrt[3]{a}$
3) $8ab^2\sqrt[3]{a^2}$
4) $8a^2b^3\sqrt[3]{a}$

2. What is the solution set of the equation $\frac{30}{x^2-9}+1=\frac{5}{x-3}$?

1) {2,3}
2) {2}
3) {3}
4) { }

3. Solve *graphically* for all values of x: $\sqrt{x-5}+x=7$

4. A manufacturing company has developed a cost model, $C(x)=0.15x^3+0.01x^2+2x+120$, where x is the number of items sold, in thousands. The sales price can be modeled by $S(x)=30-0.01x$. Therefore, revenue is modeled by $R(x)=x\bullet S(x)$. The company's profit, $P(x)=R(x)-C(x)$, could be modeled by

1) $0.15x^3+0.02x^2-28x+120$
2) $-0.15x^3-0.02x^2+28x-120$
3) $-0.15x^3+0.01x^2-2.01x-120$
4) $-0.15x^3+32x+120$

5. Express the following in simplest form:

$$\frac{4x^3+12x^2-5}{x+5}$$

6. Express the following in simplest form:

$$\frac{3x^3+x^2+2x+5}{x^2+2x+1}$$

7. Given $f(x) = 2x^2 + 4x - 2$ and $g(x) = x - 2$.
Express $[f(x)][g(x)] - [g(x)]^3$

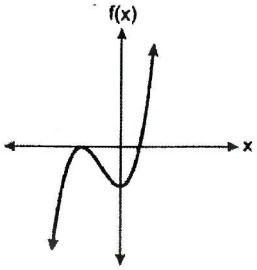
8. Is $3x-2$ a factor of $p(x)=3x^3-2x^2-27x+18$? Explain your answer.

9. Consider the polynomial $p(x)=x^3+kx-30$. Find a value of k so that $x+3$ is a factor of P.

10. Does the equation $x^2 - 4x + 13 = 0$ have imaginary solutions? Justify your answer.

11. Which graph best represents the graph of $f(x) = (x+a)^2(x-b)$, where a and b are positive real numbers?

1)



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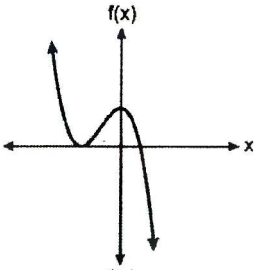

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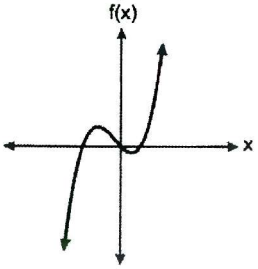

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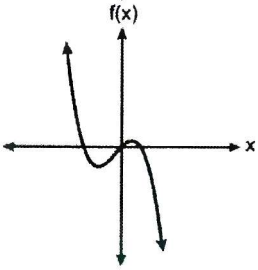


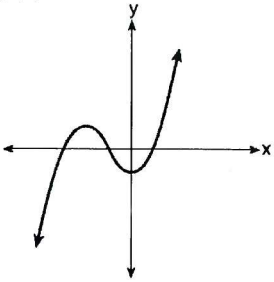
12. Consider the end behavior description below.

- as $x \to -\infty$, $f(x) \to \infty$
- as $x \to \infty$, $f(x) \to -\infty$

Which function satisfies the given conditions?

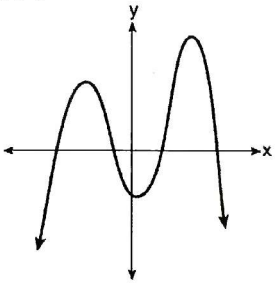
1) $f(x) = x^4 + 2x^2 + 1$

2)



3) $f(x) = -x^3 + 2x - 6$

4)



13. Express in *simplest a+bi* form

$5xi^{14} + 4i^5(2+3xi^7)$

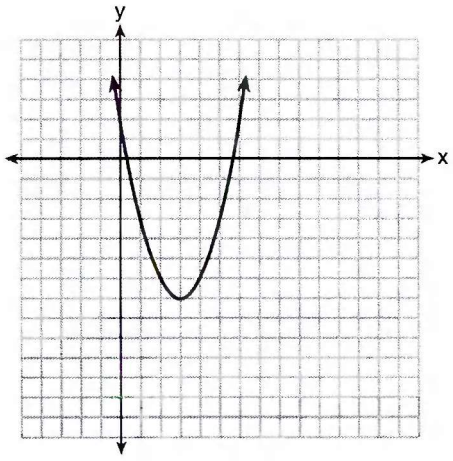
14) For which values of x, rounded to the *nearest hundredth*, will $|x^2 - 9| - 3 = \log_3 x$?

1) 2.29 and 3.63
2) 2.37 and 3.54
3) 2.84 and 3.17
4) 2.92 and 3.06

15. Given $f(x) = -|x|$ and $g(x) = \log_2(x)$, which interval best represents the solution set to the inequality $g(x) > f(x)$?

1) $(-0.64, \infty)$
2) $(0.64, \infty)$
3) $(0, 0.64]$
4) $(0, 0.64)$

16. The graph representing a function is shown below.



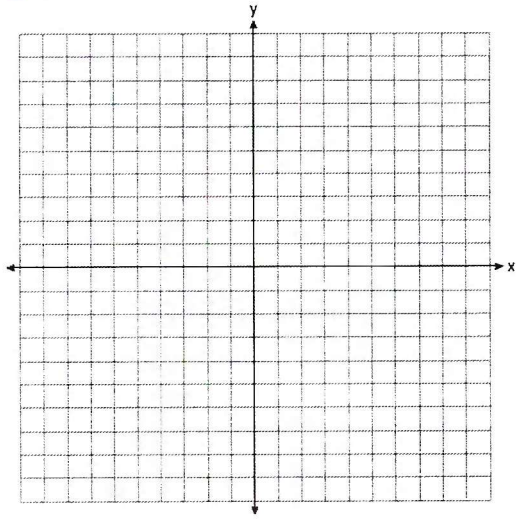
Which function has a minimum that is *less* than the one shown in the graph?

1) $y = x^2 - 6x + 7$
2) $y = |x + 3| - 6$
3) $y = x^2 - 2x - 10$
4) $y = |x - 8| + 2$

17. The graph of $y = 2^x - 4$ is positive on which interval?

1) $(-\infty, \infty)$
2) $(2, \infty)$
3) $(0, \infty)$
4) $(-4, \infty)$

18) Graph $p(x) = x^3 + 2x^2 - x - 2$ over the interval $-2 \le x \le 1$ and fill in the end behavior



$x \to -\infty,\ f(x) \to$

$x \to \infty,\ f(x) \to$

19) What is the inverse of the function $y = 4x + 5$?

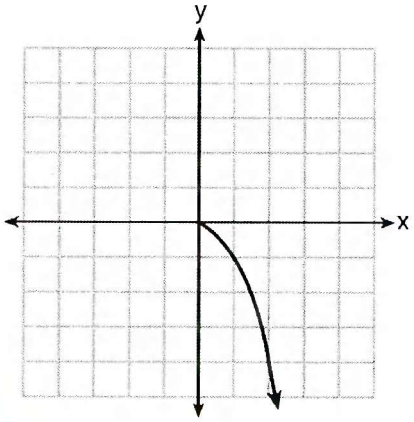
1) $x = \frac{1}{4}y - \frac{5}{4}$

2) $y = \frac{1}{4}x - \frac{5}{4}$

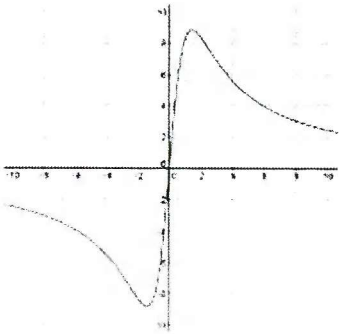
3) $y = 4x - 5$

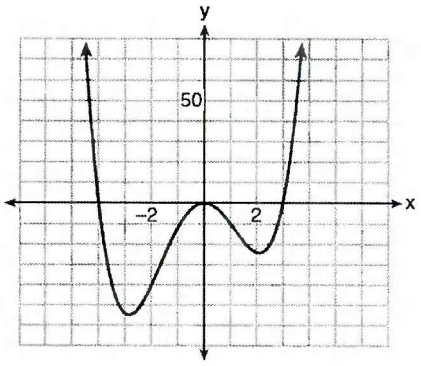
4) $y = \frac{1}{4x+5}$

20. Graph the inverse of the function below on the same set of axes.



21) Determine whether the following functions are even, odd, or neither. Explain your answer.



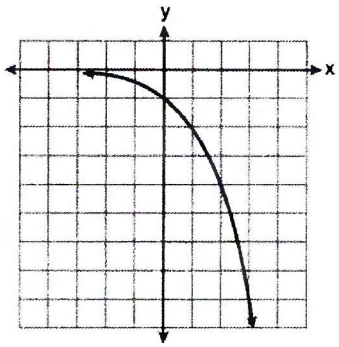


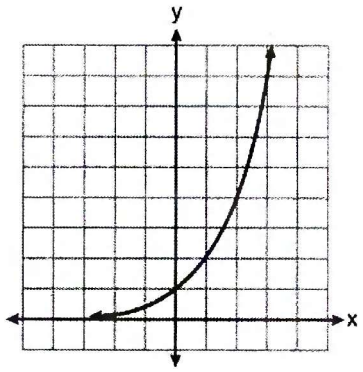
$f(x) = -2|x| - 4$

22) How is the parent function transformed to create $f(x) = -(x-4)^2 + 3$?

23. Consider the function $y = h(x)$, defined by the graph to the right. Which equation could be used to represent the graph shown below?

1) $y = h(x) - 2$
2) $y = h(x - 2)$
3) $y = -h(x)$
4) $y = h(-x)$





24. The quadratic function $f(x)$ has a vertex of $(-4, 2)$. If $g(x) = f(2x)$, what is the vertex of $g(x)$?

1) $(-8, 2)$
2) $(-2, 2)$
3) $(-8, 4)$
4) $(-2, 1)$

25. The average monthly high temperature in Buffalo, in degrees Fahrenheit, can be modeled by the function $B(t) = 25.29 \sin(0.4895t - 1.9752) + 55.2877$, where t is the month number (January = 1). State, to the *nearest tenth*, the average monthly rate of temperature change between August and November. Explain its meaning in the given context.

26. Express in simplest form with a rational exponent:

$a\sqrt[5]{a^4}$

32. Solve for x and round to the *nearest thousandth.*

$12 + 2(5)^{8x} = 2000$

33. The following data table shows a car's speed in miles per hour and the car's fuel efficiency in miles per gallon for each speed. Write the quadratic regression equation for these data, rounding all coefficients to the *nearest thousandth*. Using the equation above, algebraically determine, to the *nearest tenth of a mile per hour*, the fastest speed the car can be driven so that its fuel efficiency is 30 miles per gallon.

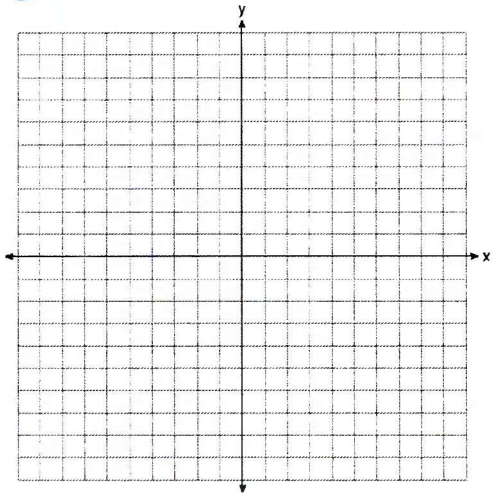
Speed (mph)	**Fuel Efficiency** (mpg)
18.6	26.1
24.9	29.4
31.1	31.4
37.3	33.1
43.5	33.2
49.7	31.4
55.9	29.5
62.1	26.0

34. Water is draining from a tank maintained by the Yorkville Fire Department. Students measured the depth of the water in 15-second intervals and recorded the results in the accompanying table. Write the power regression equation for this set of data, rounding all values to the *nearest ten-thousandth*. Using this equation, predict the depth of the water at 120 seconds, to the *nearest tenth of a foot*.

Time (x) (in seconds)	**Depth of Water (y)** (in feet)
15	11.8
30	9.9
45	8.2
60	6.3
75	5.9

Graph the following functions on the grids provided and fill in the end behavior

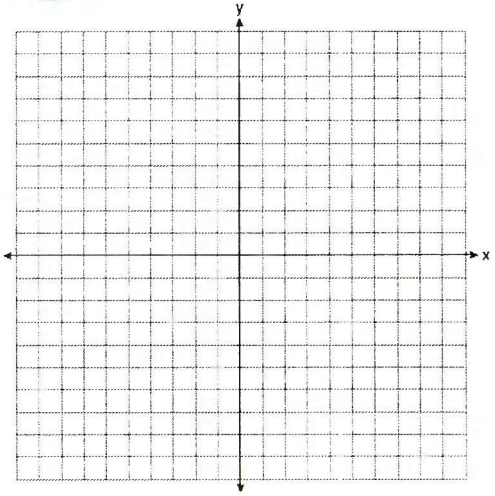
27. $y=\log_2(x+9)-3$



$x \to -9,\ f(x) \to$

$x \to \infty,\ f(x) \to$

28. $c(x) = -9(3)^{x-4} + 2$



$x \to -\infty,\ f(x) \to$

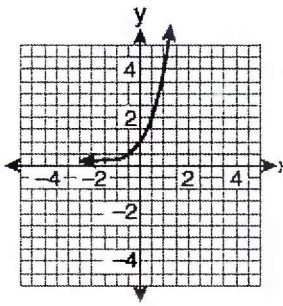
$x \to \infty,\ f(x) \to$

29. Given the equation $f(x)=\pi^x$, which of the following statements is true?

1) The graph passes through $(\pi,1)$
2) The domain is $[0,\infty)$
3) The graph passes through $(0,1)$
4) The range is all real numbers

30. If a function is defined by the equation $f(x) = \log_4 x$, which graph represents the inverse of this function?

1)



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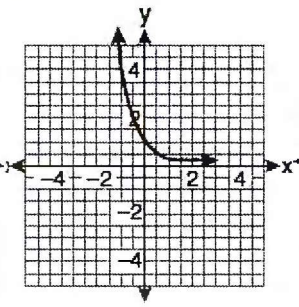

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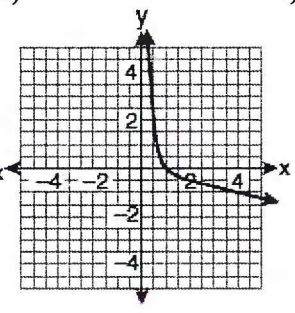

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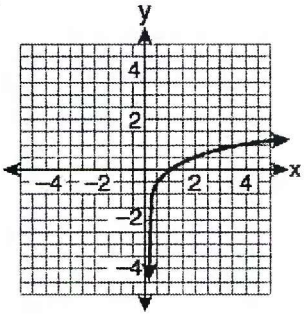


31. For the equation $f(x) = \log_2(x-4)+3$, as $x \to 4$

1) $f(x) \to -\infty$
2) $f(x) \to 3$
3) $f(x) \to \infty$
4) $f(x) \to 4$

35. The table below gives air pressures in kPa at selected altitudes above sea level measured in kilometers.

x	**Altitude** (km)	0	1	2	3	4	5
y	**Air Pressure** (kPa)	101	90	79	70	62	54

Write an exponential regression equation that models these data rounding all values to the *nearest thousandth*. Use this equation to algebraically determine the altitude, to the *nearest hundredth* of a kilometer, when the air pressure is 29 kPa.

36. After sitting out of the refrigerator for a while, a turkey at room temperature (68°F) is placed into an oven at 8 a.m., when the oven temperature is 325°F. Newton's Law of Heating explains that the temperature of the turkey will increase proportionally to the difference between the temperature of the turkey and the temperature of the oven, as given by the formula below. The turkey reaches the temperature of approximately 100° F after 2 hours. Find the value of k, to the *nearest thousandth*. Use your value of k to find how long it will take, to the *nearest tenth of an hour*, for the temperature of the turkey to reach 165°F.

$$T = T_a + (T_0 - T_a)e^{-kt}$$

T_a = the temperature surrounding the object

T_0 = the initial temperature of the object

t = the time in hours

T = the temperature of the object after t hours

k = decay constant

37. One of the medical uses of Iodine–131 (I–131), a radioactive isotope of iodine, is to enhance x-ray images. The half-life of I–131 is approximately 9.1 days. A patient is injected with 40 milligrams of I–131. Create an equation for $a(t)$, the amount of Iodine-131 remaining after t days. To the *nearest* milligram, how much Iodine-131 will remain after 18 days?

38. Danielle bought a basketball card for $2000 its value is increasing by 2.9% each year. Create an equation for $v(t)$, the value of the basketball card after t years. Using your equation, how long, to the *nearest year*, will it take for the value of the basketball card to reach $12000?

39. If a bank account was opened with $4000 and interest is compounded continuously at 3.9%. Write an equation for $v(t)$, the value of the account after t years. To the *nearest hundredth of a year*, how long will it take for the value of the account to triple?

40. Blake deposits $21,000 into a savings account with interest compounded monthly at a rate of 3.2% each year. Write an equation for $A(t)$, the value of her account after t years. Use your equation to determine how much money will be in her account after 6 years?

41. Ilana deposits $2500 into a bank account where 3% interest is given every 1.8 years. Write an equation for $v(t)$, the value of Ilana's account after t years. Using your equation, to the *nearest tenth of a year*, how long will it take for Ilana's investment to reach $4000?

42. A collectible toy was bought 15 years ago for \$5 and is now worth \$42. Find the annual growth rate to the *nearest tenth of a percent*.

43. A sample of 2000 grams of Fluorine-18 has a half life of 109.734 minutes. Which inequality can be used to represent how many minutes, m, can pass for there to be a minimum of 67 grams remaining?

1) $2000(\frac{1}{2})^{\frac{t}{109.734}} \geq 67$

2) $2000(\frac{1}{2})^{\frac{t}{109.734}} \leq 67$

3) $2000(2)^{\frac{t}{109.734}} \geq 67$

4) $2000(2)^{\frac{t}{109.734}} \leq 67$

44. The value of an investment account, $v(t)$, can be modeled by the equation $v(t) = 500(1.15)^{3.2t}$ after t years. Which of the following statements must be true?

1) The account is increasing approximately 15% each year.
2) The account is increasing approximately 56% each year
3) There will be \$1216.80 in the account after two years
4) It will take 3.68 years for the account to double

45. The value of a stock after t years can be modeled by the function $V = 2500(1.14)^t$ after t years. Which function would represent the weekly rate of increase after w weeks?

1) $V = 2500(1.14)^w$

2) $V = 2500(1.14)^{52w}$

3) $V = 2500(1.0025)^w$

4) $V = 2500(1.0025)^{52w}$

46. Mia has a student loan that is in deferment, meaning that she does not need to make payments right now. The balance of her loan account during her deferment can be represented by the function $f(x) = 35,000(1.0325)^x$, where x is the number of years since the deferment began. If the bank decides to calculate her balance showing a monthly growth rate, an approximately equivalent function would be

1) $f(x) = 35,000(1.0027)^{12x}$

2) $f(x) = 35,000(1.0027)^{\frac{x}{12}}$

3) $f(x) = 35,000(1.0325)^{12x}$

4) $f(x) = 35,000(1.0325)^{\frac{x}{12}}$

47. The value of Kiara's stock can be modeled by $A = 2500(1.016)^m$ where m represents the number of months her stock has been invested. Which equation would represent the yearly growth rate of her stock after m months?

1) $A = 2500(1.0013)^m$
2) $A = 2500(1.2098)^m$
3) $A = 2500(1.2098)^{12}$
4) $A = 2500(1.2098)^{\frac{m}{12}}$

48. Nvidia stock has been increasing by 1.7% each day according to the formula $v(t) = 1000(1.017)^t$ where t represents days. Which of the following equations can be used to find the weekly growth rate after w weeks?

1) $v(w) = 1000(1.0024)^w$
2) $v(w) = 1000(1.1252)^w$
3) $v(w) = 1000(1.0024)^{\frac{w}{7}}$
4) $v(w) = 1000(1.1252)^{7w}$

49. A theater with 15 rows has 10 seats in the first row, 12 seats in the second row, 14 seats in the third row, and so on. Write an explicit and recursive formula that can be used to determine the number of seats in the nth row of the theater.

50. Dana began an exercise program using a FitBit to measure her distance walked on her treadmill, in miles, per week. The following table shows her progress over three weeks.

Week	1	2	3
Distance Walked on Treadmill (miles)	9	11.7	15.21

If she continues to progress in this manner, which of the listed statements could model the number of miles Dana walks on her treadmill, a_n, in terms of n, the number of weeks?

1) $a_n = 9(1.3)^n$
2) $a_n = 9 + 2.7(n-1)$
3) $a_1 = 9$, $a_n = 1.3a_{n-1}$
4) $a_1 = 9$, $a_n = 2.7 + a_{n-1}$

51. If $a_n = 3a_{n-1} - 4$ and $a_2 = 9$, find a_5

52. Daniela invested $2000 in a stock that increases by 1.6% each week. Which of the following recursive sequences represents the value of her stock after n weeks?

1) $a_0 = 2000$
$a_n = a_{n-1} + 1.6$

2) $a_0 = 2000$
$a_n = a_{n-1} + 1.016$

3) $a_0 = 2000$
$a_n = 1.6a_{n-1}$

4) $a_0 = 2000$
$a_n = 1.016a_{n-1}$

53. Kina earns a $27,000 salary for the first year of work at her job. She earns annual increases of 2.5%. What is the total amount, to the *nearest cent*, that Kina will earn for the first eight years at this job?

54. A company fired several employees in order to save money. The amount of money the company saved per year over five years following the loss of employees is shown in the table below.
Which expression determines the total amount of money saved by the company over 5 years?

1) $\frac{59,000 - 59,000(1.1)^5}{1 - 1.1}$

2) $\frac{59,000 - 59,000(0.1)^5}{1 - 0.1}$

3) $\sum_{x=1}^{5} 59,000(1.1)^x$

4) $\sum_{x=1}^{5} 59,000(0.1)^{x-1}$

Year	Amount Saved (in dollars)
1	59,000
2	64,900
3	71,390
4	78,529
5	86,381.9

55. Find the sum of the first 12 terms of the sequence 6 + 11 + 16 + 21 + ...

56. Monthly mortgage payments can be found using the formula below:

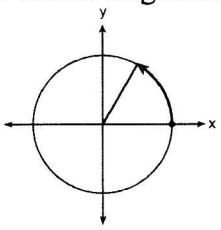
$$M = \frac{P\left(\frac{r}{12}\right)\left(1+\frac{r}{12}\right)^{n}}{\left(1+\frac{r}{12}\right)^{n}-1}$$

M = monthly payment
P = amount borrowed
r = annual interest rate
n = number of monthly payments

The Banks family would like to purchase a home for $220,000. They qualified for an annual interest rate of 4.8%. If they put make a down payment of $100,000 and plan to spend 15 years to repay the loan, what will be the monthly payment rounded to the *nearest* cent?

57. Which diagram shows an angle rotation of 1 radian on the unit circle?

1)



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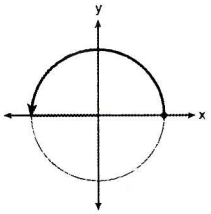

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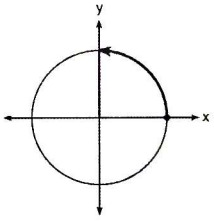

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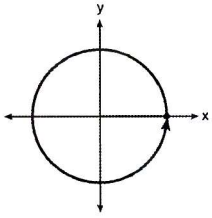


58. The exact value of $\sin\left(\frac{8\pi}{3}\right)$ is

1) $\frac{1}{2}$

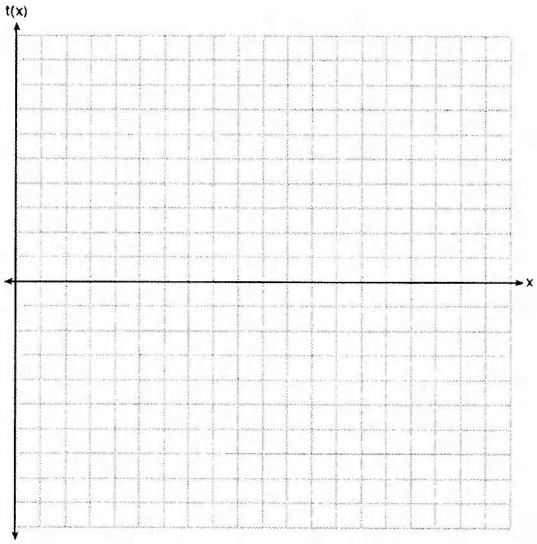
2) $-\frac{1}{2}$

3) $-\frac{\sqrt{3}}{2}$

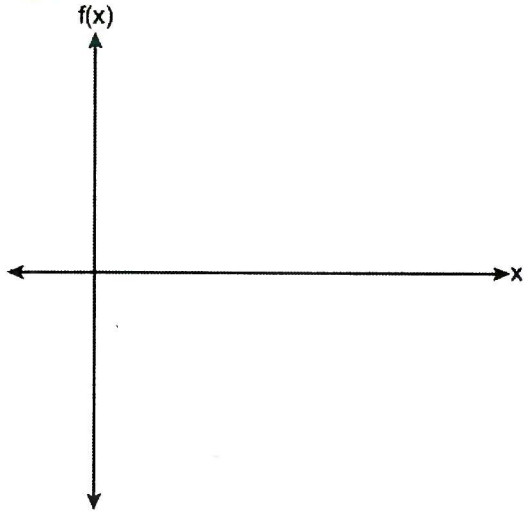
4) $\frac{\sqrt{3}}{2}$

59. An angle, θ, is in standard position and its terminal side passes through the point $(2,-1)$. Find the *exact* value of $\sin\theta$.

60. On the grid below, graph one full cycle of $y=-3\sin\frac{\pi}{4}x+2$



61. On the grid below, graph $y=3\cos 2x+1$ over the domain $[0,2\pi]$



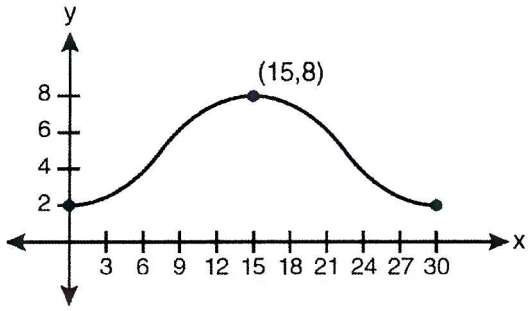
62. Which equation is graphed in the diagram below?

1) $y = 3\cos\left(\frac{\pi}{30}x\right) + 8$

2) $y = 3\cos\left(\frac{\pi}{15}x\right) + 5$

3) $y = -3\cos\left(\frac{\pi}{30}x\right) + 8$

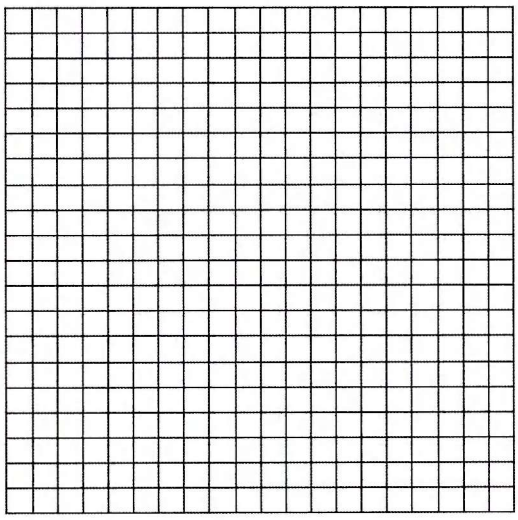
4) $y = -3\cos\left(\frac{\pi}{15}x\right) + 5$



63. Consider the function $h(x) = 2\sin(3x) + 1$ and the function q represented in the table below. Determine which function has the *smaller* minimum value for the domain $[-2, 2]$. Justify your answer.

x	$q(x)$
−2	−8
−1	0
0	0
1	−2
2	0

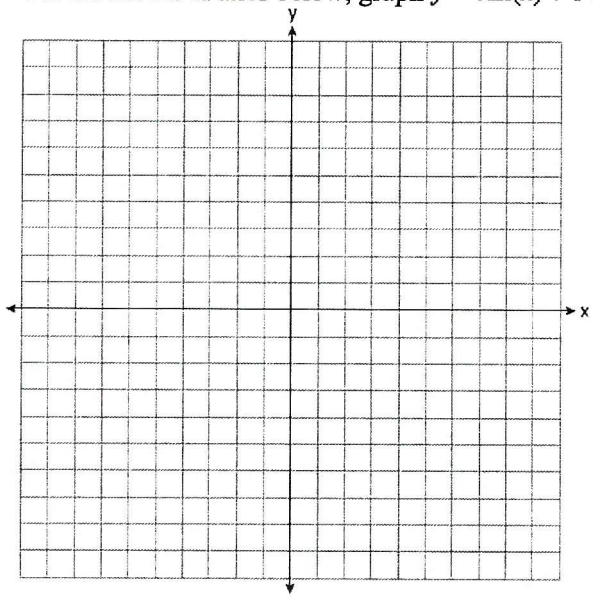
64. The ocean tides near Carter Beach follow a repeating pattern over time, which can be modeled by the equation $h(t) = -12\cos\left(\frac{2\pi}{13}t\right)$ where $h(t)$ represents height above sea level and t represents hours after 8:30 AM. On the grid below, graph one cycle of this function. Determine the period and state its meaning in the context of the problem



65. Which statement is true of the function $y = -2\cos[3(x-4)] + 7$?

1) The midline is $y = -4$
2) The amplitude is -2
3) The range is $[-2, 2]$
4) The frequency is $\frac{3}{2\pi}$

66. On the set of axes below, graph $y = \tan(x) + 1$ for *at least one* cycle.



67. Given $p(\theta) = 3\sin\left(\frac{1}{2}\theta\right)$ on the interval $-\pi < \theta < \pi$, the function p

1) decreases, then increases
2) increases, then decreases
3) decreases throughout the interval
4) increases throughout the interval

68. Given: $A = \{11, 14, 16, 21, 27, 33, 35\}$
$B = \{4, 8, 12, 16\}$

a) What is $A \cap B$, the intersection of A and B?

b) What is $A \cup B$, the union of A and B?

69. Given: $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$

$B = \{2, 3, 5, 6\}$

Set B is a subset of set U. What is the complement of set B?

1) $\{\ \}$
2) $\{2, 3, 5, 6\}$
3) $\{1, 4, 7, 8\}$
4) $\{1, 2, 3, 4, 5, 6, 7, 8\}$

70. The probability of event A is .46. The probability of event B is .31. The probability of both events happening is .19. What is the probability that event A or event B happens?

71. The probability of event A happening is 28% and the probability of event B happening is 41%, The probability that event A or event B happens is 30%. What is the probability that event A and event B happens?

72. On a given school day, the probability that Cristian is late is 22% and the probability he has a does his homework is 62%. Assuming these two events are independent, what is the probability that Cristian oversleeps and does his homework on the same day?

73. A statistics class surveyed some students during one lunch period to obtain opinions about television programming preferences. The results of the survey are summarized in the table below.

Programming Preferences

	Comedy	Drama
Male	70	35
Female	48	42

What is the probability that a student is male and prefers comedy?

What is the probability that a male student would prefer comedy?

What is the probability that a student is male?

What is the probability that a student is female given that they like drama?

74. The results of a survey of the student body at Central High School about television viewing preferences are shown below.

	Comedy Series	Drama Series	Reality Series	Total
Males	95	65	70	230
Females	80	70	110	260
Total	175	135	180	490

Are the events "student is a male" and "student prefers reality series" independent of each other? Justify your answer.

75. Given events T and K are independent of each other, if $P(T) = 0.35$, $P(K) = 0.48$, find $P(K \mid T)$

76. The scores of a recent test taken by 1200 students had an approximately normal distribution with a mean of 225 and a standard deviation of 18. Determine the number of students who scored higher than 240

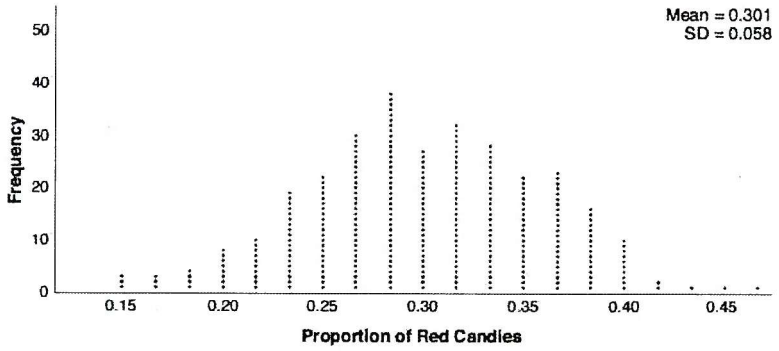
77. Which scenario is best described as an observational study?

1) For a class project, students in Health class ask every tenth student entering the school if they eat breakfast in the morning.
2) A social researcher wants to learn whether or not there is a link between attendance and grades. She gathers data from 15 school districts.
3) A researcher wants to learn whether or not there is a link between children's daily amount of physical activity and their overall energy level. During lunch at the local high school, she distributed a short questionnaire to students in the cafeteria.
4) Sixty seniors taking a course in Advanced Algebra Concepts are randomly divided into two classes. One class uses a graphing calculator all the time, and the other class never uses graphing calculators. A guidance counselor wants to determine whether there is a link between graphing calculator use and students' final exam grades.

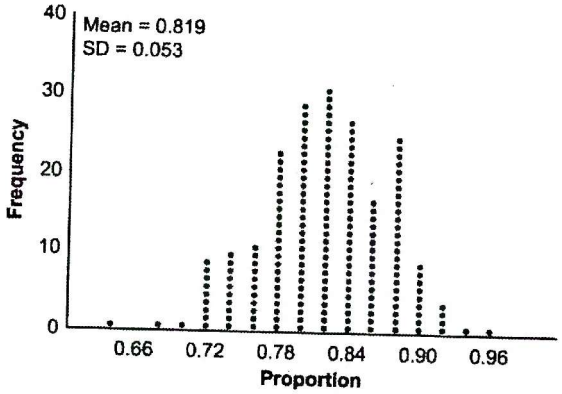
78. A survey is to be conducted in a small upstate village to determine whether or not local residents should fund construction of a skateboard park by raising taxes. Which segment of the population would provide the most unbiased responses?

1) a club of local skateboard enthusiasts
2) senior citizens living on fixed incomes
3) a group opposed to any increase in taxes
4) every tenth person 18 years of age or older walking down Main St.

79. Mary bought a pack of candy. The manufacturer claims that 30% of the candies manufactured are red. In her pack, 14 of the 60 candies are red. She ran a simulation of 300 samples, assuming the manufacturer is correct. The results are shown below. Based on the simulation, determine the middle 95% of plausible values that the proportion of red candies in a pack is within. Based on the simulation, is it unusual that Mary's pack had 14 red candies out of a total of 60? Explain.



80. State officials claim 82% of a community want to repeal the 30 mph speed limit on an expressway. A community organization devises a simulation based on the claim that 82% of the community supports the repeal. Each dot on the graph below represents the proportion of community members who support the repeal. The graph shows 200 simulated surveys, each of sample size 60. Based on the simulation, determine the margin of error rounded to the *nearest hundredth.*



81. Juanita rolls a 6 sided die and recorded that it landed on 6 five times out of 50. She questioned whether the die was fair so she ran a computer simulation of 1000 samples of 50 rolls of a fair die. The mean of the simulation was .159 with a standard deviation of .102. Is her die fair? Explain your answer.

82. Factor the following

a) $36 - 25x^2$

b) $x^2 - 7x + 12$

c) $3x^2 + 9x - 12$

d) $6x^2 - 54$

e) $2x^2 + 7x - 4$

f) $x^3 + 3x^2 - 9x - 27$

g) $3x^3 + x^2 - 12x^2 - 4x - 63x - 21$

h) $(x^2 - 2x)^2 - 11(x^2 - 2x) + 24$

i) $y^3 - 125$

83. Express in simplest form:

$$\frac{6 - 2x}{x^2 - 9}$$

84. Solve $x(x-3)=4x+30$ algebraically

85. The solutions to the equation $3x^2-4x+2=2x-3$ are

1) $\frac{2}{3}\pm\frac{\sqrt{2}}{3}i$

2) $1\pm\frac{\sqrt{6}}{3}i$

3) $1\pm\frac{\sqrt{12}}{3}$

4) $1\pm 2\sqrt{6}i$

86. Solve the equation $x^2+2x=-6$ algebraically and express the answer in simplest $a+bi$ form.

87. Algebraically determine the zeros of the function below.
$r(x)=3x^3+12x^2-3x-12$

88. Solve the following equation algebraically for all values of x:
$\sqrt{x-5}+x=7$

89. Solve the following equation algebraically for all values of x:

$$\frac{x}{x-1}=\frac{2}{x}+\frac{1}{x-1}$$

90. To solve $\frac{2x}{x-2}-\frac{11}{x}=\frac{8}{x^2-2x}$, Ren multiplied both sides by the least common denominator. Which statement is true?

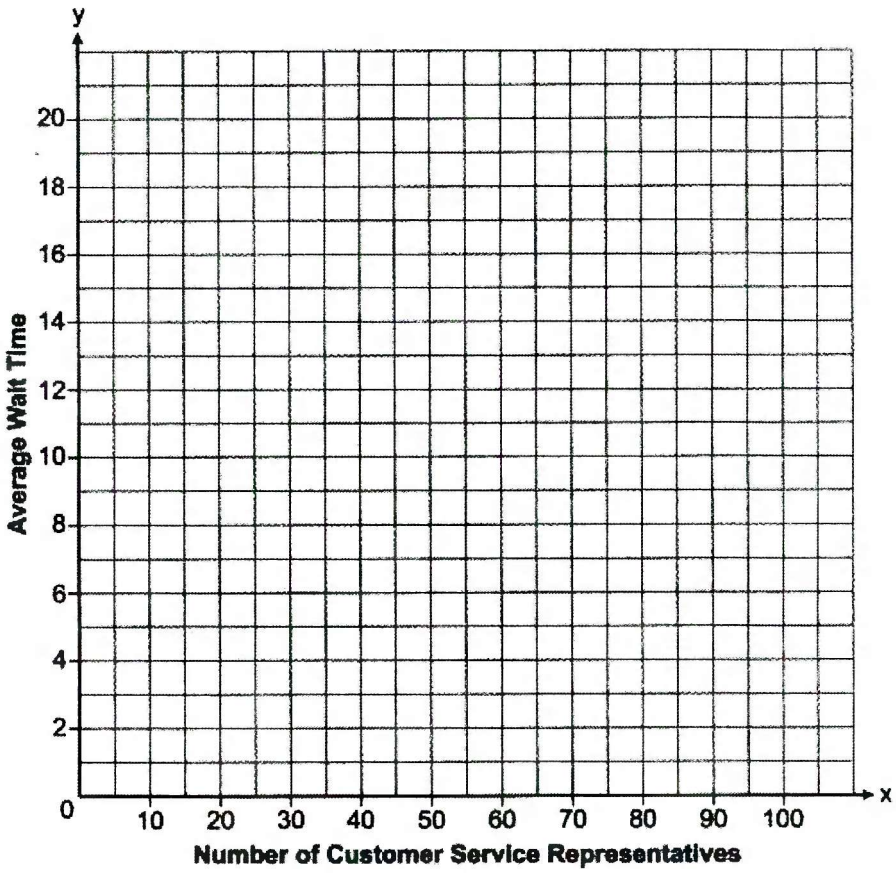
1) 2 is an extraneous solution.
2) $\frac{7}{2}$ is an extraneous solution.
3) 0 and 2 are extraneous solutions.
4) This equation does not contain any extraneous solutions.

91. Solve the following system of equations algebraically for all values of x and y.

$$x^2+y^2=25$$

$$y+5=2x$$

92. A technology company is comparing two plans for speeding up its technical support time. Plan A can be modeled by the function $A(x) = 15.7(0.98)^x$ and plan B can be modeled by the function $B(x) = 11(0.99)^x$ where x is the number of customer service representatives employed by the company and $A(x)$ and $B(x)$ represent the average wait time, in minutes, of each customer. Graph $A(x)$ and $B(x)$ in the interval $0 \leq x \leq 100$ on the set of axes below.



To the *nearest integer*, solve the equation $A(x) = B(x)$. Algebraically determine how many customer service representatives Plan A would need for the average wait time to be 1.5 minutes rounded to the *nearest representative*.

93. A formula for work problems involving two people is shown below.

$$\frac{1}{t_1} + \frac{1}{t_2} = \frac{1}{t_\partial}$$

t_1 = the time taken by the first person to complete the job

t_2 = the time taken by the second person to complete the job

t_∂ = the time it takes for them working together to complete the job

Fred and Barney are carpenters who build the same model desk. It takes Fred eight hours to build the desk while it only takes Barney six hours. Write an equation that can be used to find the time it would take both carpenters working together to build a desk. Determine, to the *nearest tenth of an hour*, how long it would take Fred and Barney working together to build a desk.