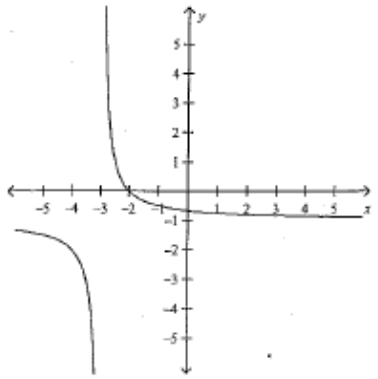
Name: _____ Class: _____ Date: _____ ID: C

Advanced Algebra Final Exam Key

Multiple Choice

Identify the choice that best completes the statement or answers the question.

A 1. Select the equation that corresponds to the following graph:



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

b. $y = \frac{1}{x+3} + 1$

c. $y = \frac{1}{x-3} - 1$

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

C 2. The expression $\frac{6}{y-5} - \frac{y+5}{y^2-25}$ is equivalent to

a. $\frac{5y}{y+5}$

b. $\frac{5y}{y-5}$

c. $\frac{5}{y-5}$

d. $\frac{5}{y+5}$

B 3. Simplify the expression $7^{-2}\left(3^5\right)\left(7^2\right)$.

a. 729
b. 243
c. 1,701
d. 81

A 4. What is the solution to the following system of equations?

$y = 3x - 9$
$y = 2x - 5$

a. (4, 3)
b. (4, 0)
c. (3, 4)
d. (6, 3)

Name:

Advanced Algebra Final Exam

Multiple Choice Identyfit the choice that best completes the statement or answers the question.

A 1. Selectthe equation that corresponds to the foliowing graph:

Class; Date:

E_ 4. What is the solution to the following system of equations?

a. b.

c. (3, 4) d. (6, 3)

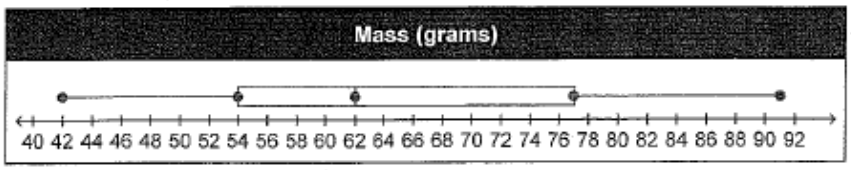
Name: _____ ID: C

Find the roots of the quadratic equation. Solve by factoring.

A 5. $x^2 - 12x + 35 = 0$

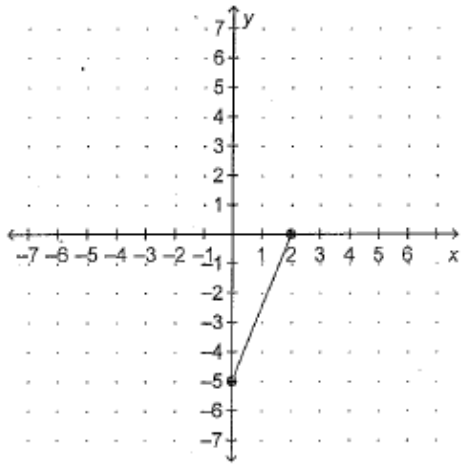
a. 5, 7
b. 6, –9
c. –9, –5
d. –5, –7

C 6. What is the range of the masses shown in the box-and-whisker plot?



a. 35 g
b. 23 g
c. 49 g
d. 62 g

B 7. What is the slope of the line segment with an x-intercept of (2, 0) and a y-intercept of (0, –5)?



a. $\frac{2}{5}$
b. $\frac{5}{2}$
c. 2
d. $-\frac{5}{2}$

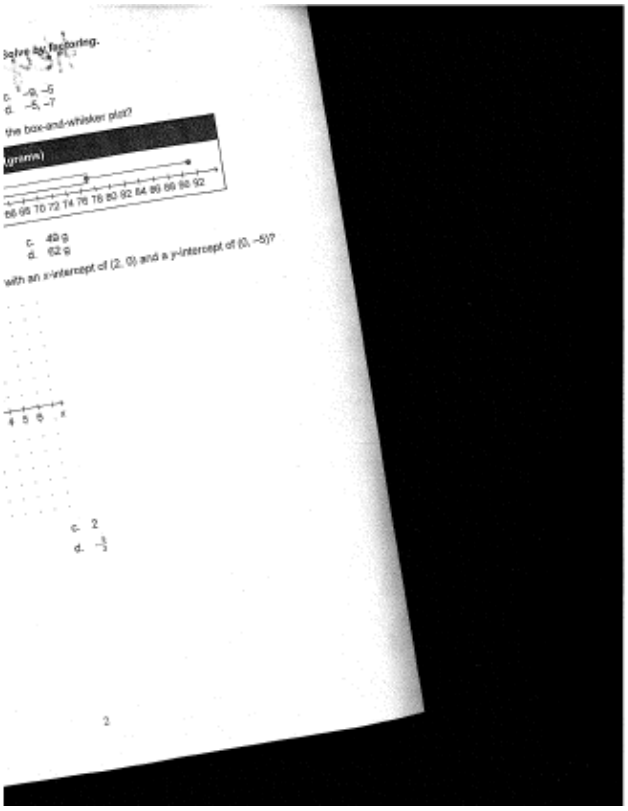
Name:

Find the roots of the quadratic -equati

§ 6. What is the range of the masses shown in the box-and-whisker plot?

W

. I 7. What is the slope of the line segment with an x-intercept of (2, O) and a y-intercept of (O, -5)?



solve by factoring.

c. −9, −5
d. −5, −7

the box-and-whisker plot?

grams)

66 68 70 72 74 76 78 80 82 84 86 88 90 92

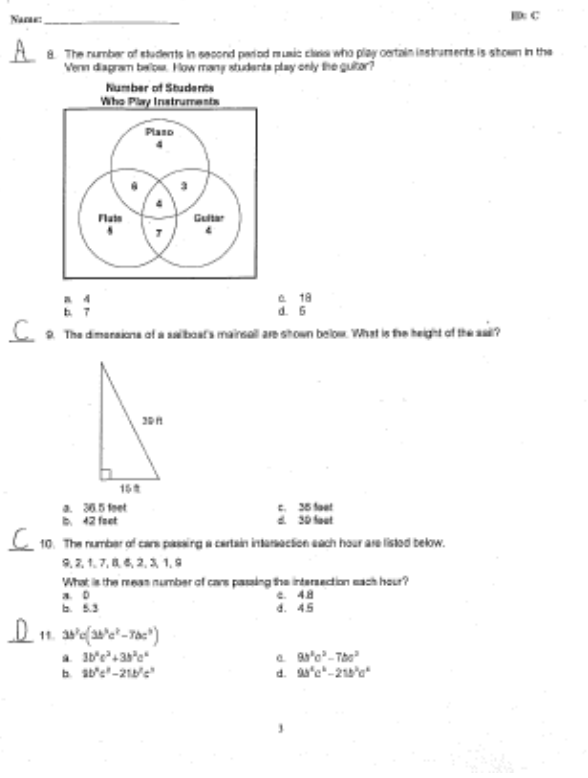
c. 49 g
d. 62 g

with an x-intercept of (2, 0) and a y-intercept of (0, −5)?

4 5 6 x

c. 2
d. $-\frac{1}{3}$

2



Name: _____ ID: C

A 8. The number of students in second period music class who play certain instruments is shown in the Venn diagram below. How many students play only the guitar?

Number of Students Who Play Instruments

Piano 4
6
3
4
Flute 8
7
Guitar 4

a. 4
b. 7
c. 18
d. 5

C 9. The dimensions of a sailboat's mainsail are shown below. What is the height of the sail?

39 ft
15 ft

a. 36.5 feet
b. 42 feet
c. 36 feet
d. 39 feet

C 10. The number of cars passing a certain intersection each hour are listed below.

9, 2, 1, 7, 8, 6, 2, 3, 1, 9

What is the mean number of cars passing the intersection each hour?

a. 0
b. 5.3
c. 4.8
d. 4.5

D 11. $3b^2c\left(3b^3c^2-7bc^3\right)$

a. $3b^6c^2+3b^2c^4$
b. $9b^6c^2-21b^2c^3$
c. $9b^5c^3-7bc^3$
d. $9b^6c^3-21b^2c^4$

3

Name: . . ID: C

hi 8. The number of students in second period music class who play certain instruments is shown in the

Venn diagram below. How many students play only the guitar?

Number‘ of Students Who Play Instruments

C 9. The dimensions of a sailboats mainsai! are shown beiow. What is the height of the salil?

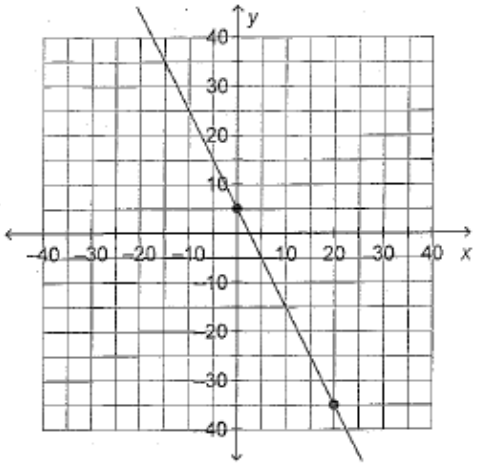
a. 36.5 feet 0. 36 feet b. 42 feet 39 feet

10. The number cars passing a certain intersection each hour are listed below.

9,2, 1, 7,8, 6,2, 3, 1,9 What is the mean number of cars passing the intersection each hour?

Name: _____ ID: C

C 12. What is the slope of the line shown below?



a. 3
b. 2
c. –2
d. –3.6

B 13. A school is purchasing copies of *The Return of the Native,* by Thomas Hardy for its English classes. Each copy costs the school $3.99. If the school pays a $30.00 flat shipping fee, the order cost, *C*, is represented by the equation below.

$C = (3.99)b + 30.00$

If the school spends $460.92 on the order, how many books, *b*, did they purchase?

a. 1,958
b. 108
c. 123
d. 1,719

B 14. The number of absent students at Fairview Middle School is shown for each month of the school year below. Which of the following measures would make the monthly absentee rate appear as small as possible?

Month	Absent Students
September	11
October	12
November	19
December	18
January	23
February	16
March	8
April	11
May	6

a. mean
b. mode
c. median
d. range

Name:

12. What the slope of the line shown below'?

" y

13. A school is purchasing copies of The Return ofthe Native, by Thomas Hardy for its English classes. Each copy costs the school $3.99. If the school pays a $30.00 flat shipping fee, the order cost, C, is represented by the equation below.

if theschool spends $460.92 on the order, how many books, b, did they purchase?

14.

The number of absent students at Fairview Middle School is shown for each month of the school year below. Which of the foliowing measures would make the monthly absentee rate appear as email as possibie? '

ember October

November

December

Janua

Febru

March

ril

Ma

a. mean 0. median b. mode d. range

Name: _____ ID: C

D 15. Divide. Reduce all common factors.

$$\frac{(X^2 + 9X + 20)}{(X^2 + X - 12)} \div \frac{(X^2 - 25)}{(X^2 + 4X - 21)}$$

a. $\frac{(x-5)}{(x+7)}$

c. $\frac{(x+5)^2 (x-5)}{(x-3)^2 (x+7)}$

b. $\frac{(x-3)^2 (x+7)}{(x+5)^2 (x-5)}$

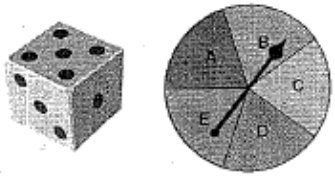
d. $\frac{(x+7)}{(x-5)}$

C 16. Evaluate and round your answer to the nearest hundredth.

$(1.33)^x$ for X = 4

a. 3.00
b. 2.13
c. 3.13
d. 3.31

D 17. Suppose a number cube labeled from 1 to 6 is rolled and the spinner below is spun one time. What is the probability of rolling an even number and spinning a vowel?



a. $\frac{1}{10}$

c. $\frac{2}{15}$

b. $\frac{2}{6}$

d. $\frac{1}{5}$

B 18. When a soccer ball is kicked straight up into the air with an initial velocity of v feet per second, the height of the ball, in feet, after t seconds can be found using the formula $h = -16t^2 + vt$. Write an equation that can be used to find the height of the soccer ball after 2.25 seconds.

a. $h = -16t^2 + 2.25t$
b. $h = -81 + 2.25v$
c. $2.25 = -16t^2 + vt$
d. $h = -16t^2 + vt + 2.25$

C 19. Which expression is equivalent to $\log_c 6x + 4(\log_c x - \log_c y)$?

a. none of these

c. $\log_c \frac{6x^5}{y^4}$

b. $\log_c \frac{24x^2}{y}$

d. $\log_c \frac{10x}{4y}$

» Name:

D 15. Divide. Reduce alt common factors.

C 16. Evaiuate and round your answer to the nearest hundredth.

(1.33)" fok X = 4

a. 3.00 c. 3.13 b. 2.13 _d. 3.31

D_ 17. Suppose a number cube labeled from 1 to 6 is rolled and the spinner. below is spun one time. What

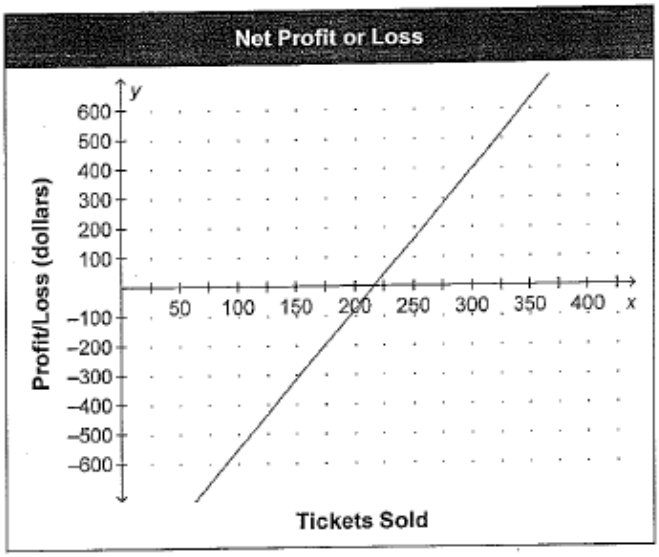
is the probability of rolling an even number and spinning a vowel?

. When a soccer ball is kicked straight up into the air with an initial veiocity. of v feet per second, the

height of the bail, in feet, after fseconds can be found using the formula 11 = 4162‘2 Write an equation that can be used to find the height of the soccer ball after 2.25 seconds.

Name: _____ ID: C

B 20. A producer has fixed expenses of $1,030 to put on a 3-day production of a play. Each ticket to the play will be sold for $4.75. The line shows the net profit or loss of the producer based on selling x tickets. What is the minimum number of tickets the producer must sell over the 3-day period in order to earn a profit?



a. 257 tickets
b. 217 tickets
c. 216 tickets
d. 233 tickets

20. A producer has fixed expenses of $1,030 to put on a 3-day

production of a piay. Each ticket to the

play will be sold for $4.75. The line shows the net profit or loss of the producer based on selling X tickets. What isthe minimum number of tickets the producer must seil over the 3-day period in order to earn a profit?

600-

500-

400-

300 -

200 -

100 -

E. 250 '. 360 i. 3150

-100 -

-200 -

-300 -

-400 -

-500 -

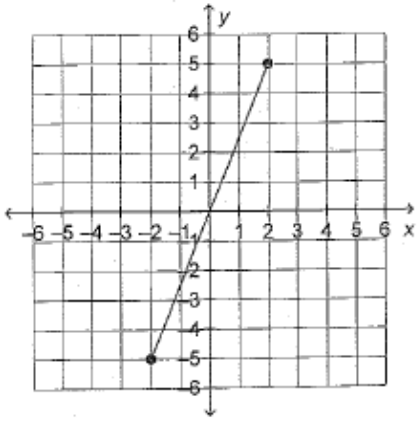
-600

Tickets Sold

257 tickets 0. 216tickets 217tickets d. 233 tickets

Name: _____ ID: C

C 21. Which of the following equations represents a line segment that is perpendicular to the segment in the graph?



a. $y = \frac{2}{5}x + 3$
b. $y = -\frac{1}{6}x$
c. $y = -\frac{2}{5}x - 6$
d. $y = \frac{6}{2}x - 8$

A 22. Suppose a flare is launched from a life raft with an initial upward velocity of 224 feet per second. The expression $-16t^2 + 224t$ gives the height, in feet, of the flare t seconds after it was launched up into the air. How long will it take for the flare to land in the sea? Solve the quadratic equation $-16t^2 + 224t = 0$ by factoring to solve the problem.

a. 14 seconds
b. 13.5 seconds
c. 6 seconds
d. 16 seconds

C 21. Which of the following equations ‘represents a line segment that is perpendicular to the

segment in

the graph?

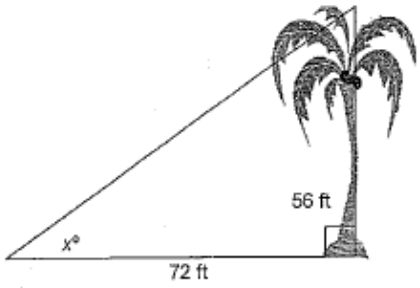
22. Suppose a flare is-launched from a Fife raft with an initiai upward veiocity of 224 feet per second.

The-expression —16f2 +2241‘ gives the height, in feet, of the flare tseconds after it was launched up into the air. How long will it take for the flare to land in the sea? Solve the quadratic equation

a. 14 seconds 0. E-Sseconds b. 13.5 seconds d. 16 seconds

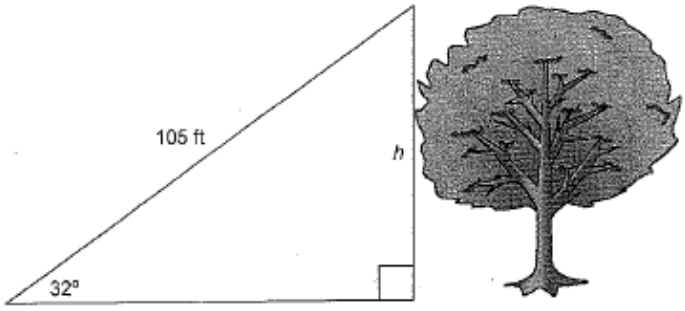
Name: _____ ID: C

A 23. Coconut palm trees can reach heights of up to 100 feet. Suppose you are lying on the beach at a distance of 72 feet from a 56-ft tall palm tree. What is the angle of elevation from your position to the top of the tree? Round to the nearest tenth if necessary.



a. 37.9°
b. 127.9°
c. 51.1°
d. 38.9°

A 24. Red maple trees can reach heights of up to 80 feet. What is the height of the maple tree shown below? Round to the nearest tenth if necessary.



a. 55.6 feet
b. 65.6 feet
c. 89 feet
d. 133.4 feet

C 25. What are the amplitude, period, and phase shift of the given function?
$f(t) = -5 \sin 7(t - \frac{1}{7})$

a. amplitude = 10
period = $\frac{2\pi}{7}$
phase shift = $\frac{1}{7}$

b. amplitude = 5
period = 2π
phase shift = $-\frac{1}{7}$

c. amplitude = 5
period = $\frac{2\pi}{7}$
phase shift = $\frac{1}{7}$

d. amplitude = –5
period = $\frac{7\pi}{2}$
phase shift = $-\frac{1}{7}$

E 23. Coconut palm trees can reach heights of up to 100 feet. Suppose you are lying on the

beach at a distance of 72 feet from a 56-ft tail palm tree. What is the angle of elevation from your position to the top of the tree? Round to the nearest tenth it necessary.

24. Red maple trees can reach heights of up to 80 feet. What is the height of the mapie tree shown

below? Round to the nearest tenth if necessary.

25. What are the amplitude, period, and phase shift of the given function?

f(t) = -5 sin

Name: _____ ID: C

C 26. Let $f(x) = x^2$. The graph of f(x) is translated down 4 units and right 9 units. Identify the function corresponding to the translation.

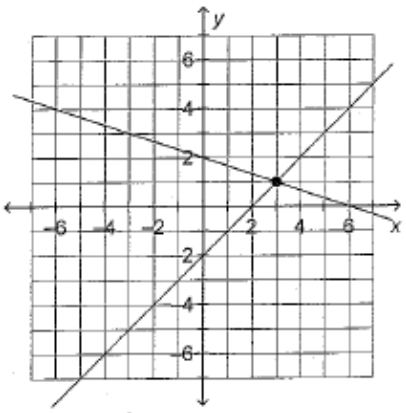
a. $f(x) = (x+9)^2 + 4$
b. $f(x) = (x-9)^2 + 4$
c. $f(x) = (x-9)^2 - 4$
d. $f(x) = (x+9)^2 - 4$

D 27. What is the solution to the following system of equations?

$y = 3x - 35$
$y = 4x - 44$

a. (9, –11)
b. (10, –8)
c. (–8, 9)
d. (9, –8)

A 28. What is the solution to the system of equations shown below?



a. (3, –1)
b. (1, 3)
c. (3, –1)
d. (–3, 1)

B 29. A jar contains 8 green marbles, 5 red marbles, 4 white marbles, and 3 blue marbles. Suppose you pick a marble at random without looking. What is the probability of selecting a white marble?

a. $\frac{4}{15}$
b. $\frac{1}{5}$
c. $\frac{1}{4}$
d. $\frac{4}{25}$

C 26. -Let f(x) = X2. The graph of f(x) is transiated down 4 units and right 9 units. Identify the

function

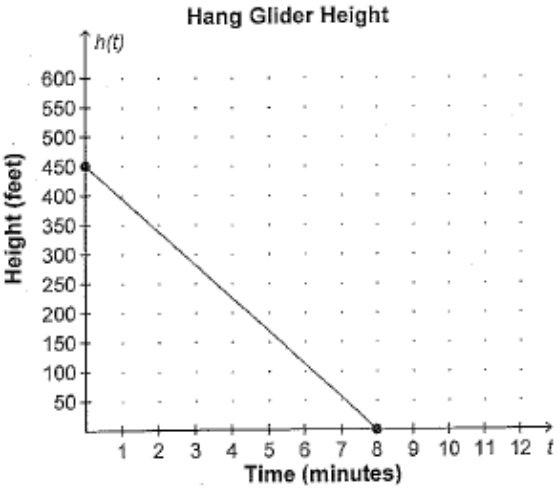
corresponding to the translation.

E; 29. Ajar contains 8 green marbles, 5 red marbles, 4 white marbles, and 3 blue-marbles. Suppose you pick a marble at random without looking. What is the probability of selecting a -white marble?

3. C

Name: _____ ID: C

The linear function $h(t)$ shown below gives the height of a hang glider after it begins its descent to the ground.



B 30. What is the domain and the range of the linear function shown above?

a. Domain: $\{0 \le t \le 450\}$
Range: $\{0 \le h(t) \le 450\}$

b. Domain: $\{0 \le t \le 8\}$
Range: $\{0 \le h(t) \le 450\}$

c. Domain: $\{0 \le t \le 450\}$
Range: $\{0 \le h(t) \le 8\}$

d. Domain: $\{0 \le t \le 5\}$
Range: $\{0 \le h(t) \le 475\}$

D 31. Given $f(x) = -3x^2 + x + 9$, find f(2).

a. 1
b. 47
c. 2
d. - 1

A 32. Write as a radical expression and evaluate if possible.

$9^{1/2}$

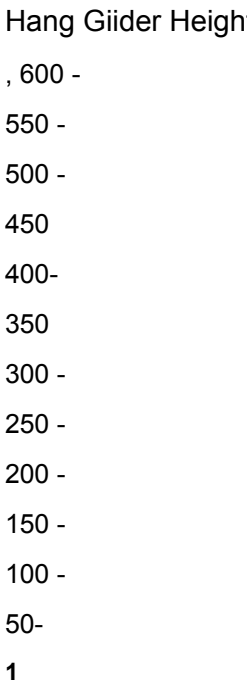
a. $\sqrt{9} = 3$
b. $\sqrt{9} = -3$
c. $\sqrt{9} = 4$
d. $\sqrt{9}$ not possible

D 33. Suppose a fair coin is tossed and a 6-sided number cube is rolled. What is the probability that the coin lands on heads and the outcome on the number cube is a number greater than 4?

a. $\frac{1}{8}$
b. $\frac{1}{3}$
c. $\frac{1}{12}$
d. $\frac{1}{6}$

Name:

The linear function shown below gives the height of a hang gfider after it begins its descent to the ground. -



. What is the domain and the range of the linear function shown above?

. Write as a radical expression and evaluate If possibie.

d. J; not possible

. Suppose a fair coin is tossed and a 6-sided number cube is rolled. What is the probabiiity that the

coilnllands on heads and the outcome on the number cube is a number greater than 4?