

WSMC First Round Knowdown 2004

"I will read the question twice then you will have 10 seconds to answer and your last answer given in the ten seconds will be the accepted one. If the answer is incorrect you will be retired from the competition. Are there any questions? Let's begin."

1.	A bag contains 1 black, 1 red, and 3 green marbles. What is the probability of randomly drawing a non-black marble out of the bag?	$\frac{4}{5}$ or 0.8 or 80 %
2.	Solve for x in $3x-5=19$	8
3.	A right triangle has a leg of 8 and a hypotenuse of 10. What is the length of the other leg?	6
4.	Evaluate $3xy^2$ when $x = 3$ and $y = -2$.	36
5.	Evaluate 10 divided by 0.5, multiplied by 3.	60
6.	Find the slope between the points (2, -2) and (4, 2).	2
7.	What is the probability of rolling a regular fair six sided die twice and each roll be a 5?	$\frac{1}{36}$
8.	Give the decimal form of 7 plus $-\frac{4}{3}$.	5.666....
9.	Give the prime factorization of 36?	$2*2*3*3$ or 2^2*3^2
10.	What is the x intercept for the graph of $y=2x+1$?	$-\frac{1}{2}$
11.	Find 2% of 350.	7
12.	How many square meters is 20,000 square cm?	2
13.	Evaluate and simplify $\frac{9}{2}$ divided by $\frac{3}{2}$.	3
14.	Find the square root of 0.36.	0.6
15.	Evaluate $-7x^2y$ when $x = -2$ and $y = \frac{1}{7}$.	-4

16.	What is the median of 3, 4, 5, 5, 6, 7, and 8?	5
17.	If a circle has an area of 16π , what is the radius?	4
18.	If the sum of all the edges on a cube is 24, what is the length of one edge?	2
19.	Evaluate 0.5^2 plus 0.5^2 plus 0.5^2	$\frac{3}{4}$ or 0.75
20.	Evaluate 8^2 divided by 2^4	4
21.	If $F(x) = 2x - 2x^2$, find $F(3)$	-12
22.	Find the slope of the line through (6,0) and (0,3)	-1/2
23.	Evaluate (32) divided (16/5)	10
24.	Solve for x in $5x - 30 = 25$	11
25.	Find the slope of the line with the equation $5 + 6x = 2y$.	3
26.	Find 300 increased by 150%	750
27.	If $F(x) = 2 - 2x $ find $F(-6)$	14
28.	Evaluate $\frac{1}{4} - \frac{3}{20}$	$\frac{2}{20}$ or $\frac{1}{10}$
29.	Solve for x in $2x - 5 > 7$	$x > 6$
30.	Find the y intercept for the line whose equation is $6x - 4y = 12$.	-3 or (0, -3)
31.	Find the diagonal of a square with sides of 5.	$5\sqrt{2}$ or $5 \cdot 2$
32.	Find the arithmetic mean of 5, 6, 7, 9, 10, and 11	8
33.	Find the greatest common factor of 30, 6, and 20	2
34.	Find the median of the even integers from 15 to 21.	18

WSMC Regional Second Round Knowdown 2004

"The second round will consist of five questions. In this round I will read the question and all of you will write your final answer on the paper in front of you. You will have 15 seconds to answer and I will count down the final three seconds; 3, 2, 1, 0. When I say zero your pencil must be on the desk in front of you or you will be disqualified. Your answers will be checked after each question and those persons with the correct answer will continue. Are there any questions? Let's begin."

1	How many minutes are there in 2.3 hours?	138
2	If 100 is reduced by 10%, then that result is increased by 10%, and finally that result is increased by 10%, what is the amount left?	108.9
3	A sector of a circle has a central angle of 30 degrees. If the radius of the circle is 6, what is the area of the sector?	3
4	How many different arrangements of the letters of the word 'tooth' are there?	30
5	If $F(x)$ is a linear function and $F(1)=4$ and $F(2)=6$, What is $F(10)$?	22

WSMC Regional

Third Round Knowdown 2004

"I will project the question and you will have 20 seconds to write and circle your answer on your paper. I (we) will count down the last three seconds as in round two and then collect your papers. If your pencil is not down by the count of zero, your answer will not be accepted. You will be able to use an SAT approved calculator on this section. Are there any questions? Let's begin."

Find the distance between
(3.2, 7.8) and (-2.1, 4.7).

~6.1...

If the ratio of the surface
areas of two similar three
dimensional objects is 9:4
then what is the ratio of their
volumes?

27/8

What is the volume of a
cone with a base diameter of
5 meters and a height of 9
meters?

$75 \frac{1}{4}$ or 18.75
or 58.9...

Find the equation of the line
through $(-1, -7)$
perpendicular to
 $3x - y = 12$.

$$x + 3y = -22 \text{ or} \\ y = -\frac{1}{3}x - \frac{22}{3}$$

Find the solution to this
system of equations:

$$6x + 3y = 24$$

$$2x = 3y + 16$$

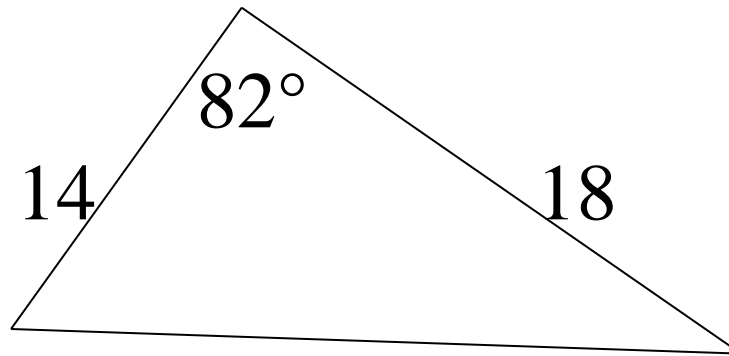
$(5, -2)$

Find the slope and y intercept
for:

$$5y^2 + y + 12 = 5y^2 + 2y - 3x$$

Slope = 3,
y intercept is 12
or $(0, 12)$

Find the unknown side of the triangle:



21.2....

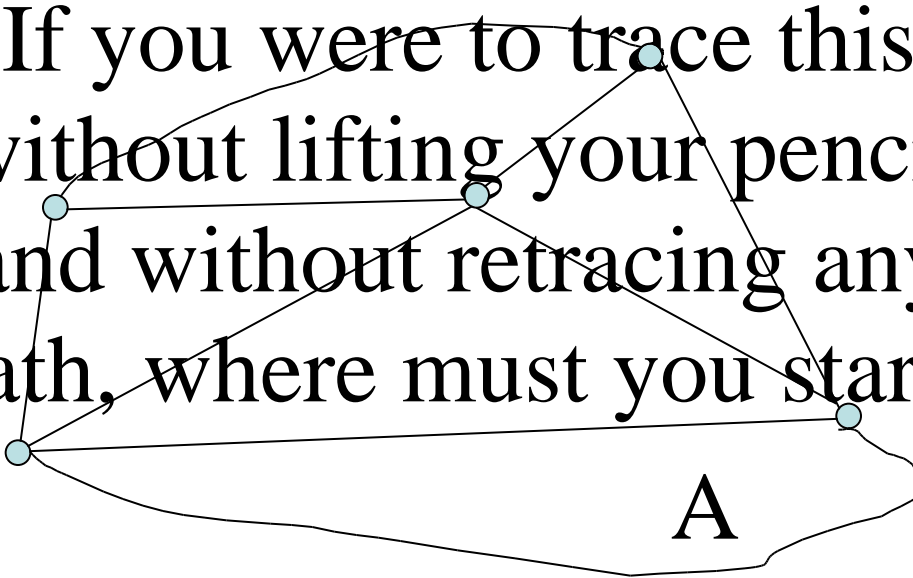
Solve for x in:
 $x^2 - 6xy + 9y^2 = 0$

X=3Y

Find the midpoint of
(3, 4, 7) and (-6, 5, -4).

$(-3/2, 9/2, 3/2)$
or $(-1.5, 4.5, 1.5)$

If you were to trace this without lifting your pencil and without retracing any path, where must you start?



B

C

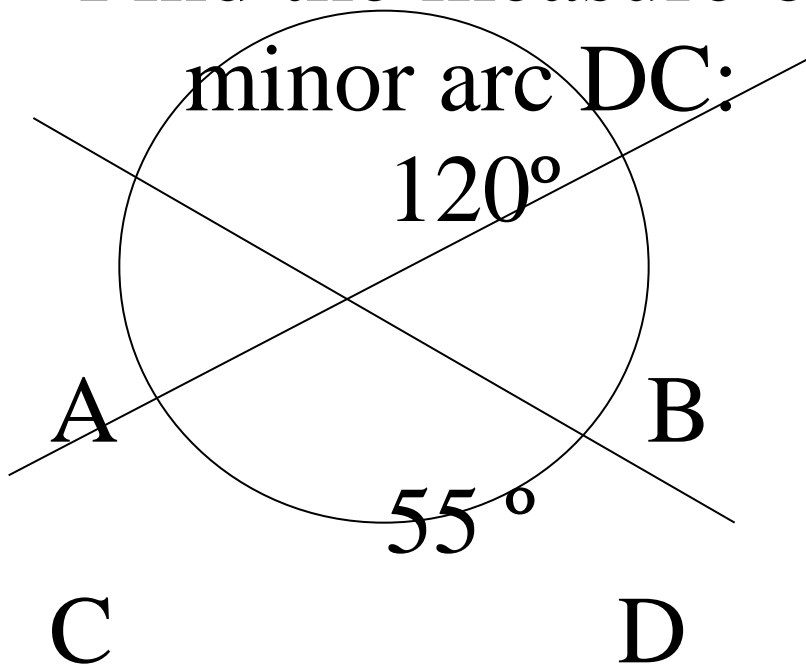
D

E

A or B
(must give both
answers)

Find the
maximum value of
 $f(x)$ if:
 $f(x) = -2x^2 + 8x + 12$

Find the measure of
minor arc DC:



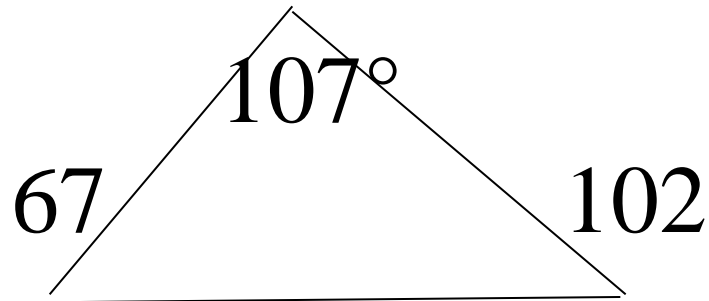
130

Multiply these matrices:

$$\begin{bmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \cdot \begin{bmatrix} 1 & 4 \\ 4 & -1 \\ 0 & -2 \end{bmatrix}$$

5 1
0 0
0 0

Find the area of the triangle:

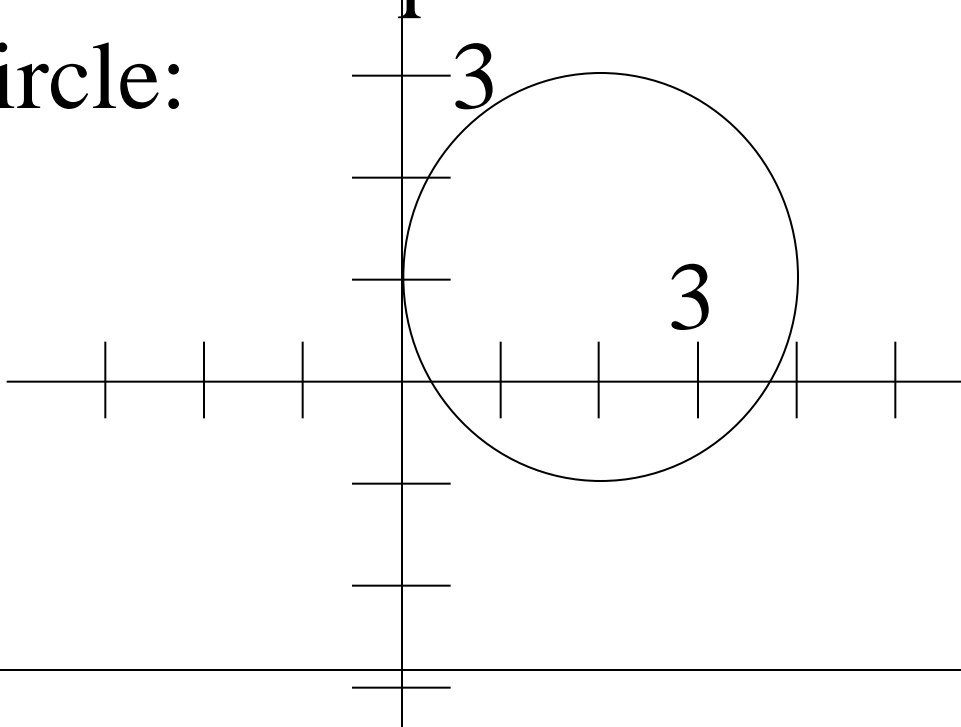


~3268

Given
 $f(x) = 4x^3 - 2x^2 + x$,
find the
real zero(s) of $f(x)$.

0

Write the equation of this
circle:



$$(x-2)^2 + (y-1)^2 = 4$$

If $f(x)$ is a function over the real numbers, $f(x) = \sqrt{x+4}$ what is the range of $f(x)$ if

0 to positive infinity

What must be added to $x^2 + 5x$ to make it a perfect square?

25/4 or 6.25

Describe the transformation where (x, y) is mapped to $(-x, -y)$

180 degree rotation

Solve for all possible values of θ where $0^\circ < \theta < 360^\circ$:

$$2 \cos (\theta/2)=1$$

120

Given these probabilities:

$$P(A)=1/2,$$

$$P(B)=2/3, \text{ and}$$

$$P(A \text{ and } B)=1/3,$$

what is $P(A \text{ or } B)$?

5/6

If a hemisphere has a volume of 18 , what is its radius?

3