

Choose the letter of the correct answer. If the correct answer is not present, choose E. NOTA

NO CALCULATORS ALLOWED

1) Mount Everest is the tallest mountain in the world, rising about 29,000 feet above sea level. Write 29,000 in Scientific Notation.

- A) 29×10^3 B) 29×10^{-3} C) 2.9×10^4 D) 2.9×10^{-4} E) NOTA

2) "If a and b are both Real numbers, then ab is also a Real number" is an example of which property?

- A) Associative Property of Multiplication B) Closure Property
C) Distributive Property D) Multiplicative Inverse E) NOTA

3) According to set theory, if $A \subset B$ and $B \subset A$, then $A = B$.

- A) Always B) Sometimes C) Never D) Not enough information E)NOTA

4) If $\frac{r}{2} = 12$, evaluate $5r$.

- A) $\frac{5}{6}$ B) 24 C) 30 D) 120 E) NOTA

5) Seven less than five times a number is the same as the product of three and the sum of twice the number and five. Find the number.

- A) 2 B) $\frac{-8}{11}$ C) -12 D) -22 E) NOTA

6) Emily's mother is currently four years more than three times Emily's age. In 18 years, the sum of their ages will be 96. If s = Emily's current age and m = the mother's current age, find $s + m$.

- A) 132 B) 60 C) 46 D) 17 E) NOTA

7) Tyanne drove 275 miles in 8 hours. Before noon he averaged 40 miles per hour and after noon he averaged 25 miles per hour. At what time did he begin his trip?

- A) 5:00 a.m. B) 7:00 a.m. C) 9:00 a.m. D) 3:00 p.m. E) NOTA

8) Solve. $-5 > 2 - |3 - 2h|$

- A) $h < -2 \cap h > 5$ B) $h < 2 \cap h > -5$ C) $h < -2 \cup h > 5$
D) $h < 2 \cup h > -5$ E) NOTA

9) Find the degree of the polynomial. $4x^2y^3 + 5xy^5 - 2x^3y^4 + 7^3x^5y$

- A) 5 B) 6 C) 7 D) 9 E) NOTA

- 10) Minty has the following five books in her locker : Math, History, Latin, Science, and English. Without looking at the books, she pulls out one book and then, without replacing the first book, pulls out a second book. What is the probability that she first pulls out the Math book and then the English book?
- A) $\frac{9}{20}$ B) $\frac{2}{5}$ C) $\frac{1}{20}$ D) $\frac{1}{25}$ E) NOTA
- 11) Write an equation in Slope-Intercept Form of the line that passes through the points (30, 500) and (90, 600).
- A) $y = \frac{5}{3}x + 450$ B) $y = \frac{5}{3}x - \frac{2410}{3}$ C) $y = \frac{3}{5}x + 482$ D) $y = \frac{3}{5}x - 270$ E) NOTA
- 12) Write an equation in Standard Form of the line that is perpendicular to $2x + 3y = 8$ and has the same x-intercept as $4x - 5y = -12$.
- A) $3x + 2y = -6$ B) $3x + 2y = -9$ C) $3x - 2y = -6$ D) $3x - 2y = -9$ E) NOTA
- 13) Simplify. Leave only positive exponents in your answer. $\frac{(3x^2y^{-3})^{-2}}{(x^{-2})(6x^{-3}y^{-2})^{-2}}$
- A) $\frac{4y^2}{x^8}$ B) $\frac{y^2}{4x^8}$ C) $\frac{x^8y^2}{4}$ D) $4x^8y^2$ E) NOTA
- 14) Which choice best represents the way to solve the following problem? Publix Super Market has $(x + y)^m$ shelves filled with cereal boxes. If there are $(x + y)^n$ boxes on each shelf, how many boxes of cereal are there?
- A) $(x + y)^{mn}$ B) $(x + y)^{m+n}$ C) $(x + y)^{m-n}$ D) $(x + y)^{n-m}$ E)NOTA
- 15) Mr. Lawyer paved his patio with 50 slate squares. His neighbor, Ms. Campbell, using slate squares 3 feet longer on a side, needed 8 slate squares to pave an equal area. What were the dimensions of Mr. Lawyer's slate squares?
- A) 2 sq feet B) $2\frac{1}{12}$ sq feet C) 8 sq feet D) $104\frac{1}{6}$ sq feet E) NOTA
- 16) How much pure acid must be added to 15 grams of an acid solution that is 40% acid in order to produce a solution that is 50% acid?
- A) 4 grams B) 3 grams C) 2 grams D) 1 gram E) NOTA

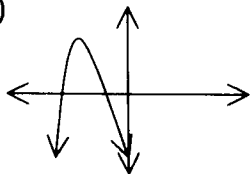
17) A dogsled racer in Alaska stopped while crossing some difficult terrain to tend to one of her dogs. She had traveled 32 kilometers before stopping, and then traveled 96 kilometers afterward, at twice the earlier rate. If the actual running time was 5 hours, find her average rate after stopping.

- A) 16 B) 22.4 C) 32 D) 44.8 E) NOTA

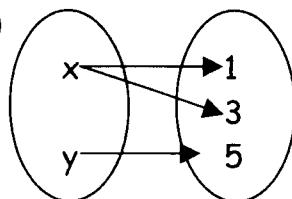
18) Which of the following relations is/are also function(s)?

I) (2, 5), (3, 5), (4, 8)

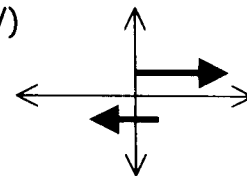
II)



III)



IV)



A) I, II, III, and IV

B) III and IV only

C) I and II only

D) none are functions

E) NOTA

19) Salim the Answer Expert gives wild guesses for \$2 and guaranteed answers for \$3.

If Salim collected \$239 from 92 paying customers, how many wild guesses did he give?

- A) 18 B) 37 C) 55 D) 74 E) NOTA

20) Given $\begin{bmatrix} -4 & 7 \\ 6 & -3 \end{bmatrix} + \begin{bmatrix} a & b \\ c & d \end{bmatrix} = \begin{bmatrix} 10 & 17 \\ 11 & -5 \end{bmatrix}$. Find $a + b + c + d$

A) $\frac{24}{7}$

B) 27

C) 31

D) 39

E) NOTA

21) Simplify. Express the result in lowest terms. $\frac{x^3 - x}{x^2 - x - 2} \div \frac{x^2 - x}{x^2 + x} \cdot \frac{2x - 4}{2x + 2}$

A) $\frac{(x-1)^2}{x(x+1)^2}$

B) $\frac{x(x-1)^2}{(x+1)^2}$

C) $\frac{1}{x}$

D) x

E) NOTA

22) The area of rectangle ABCD is 48 square inches.

Find the dimensions of the rectangle.

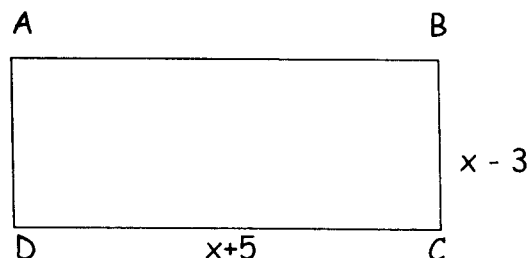
A) 2" X 24"

B) 3" X 16"

C) 4" X 12"

D) 6" X 8"

E) NOTA



23) Given the system of equations : $4x + 3y = -3$
 $\underline{2x + ay = 31}$ Find a if you know $x = 3$.

- A) $\frac{37}{3}$ B) 5 C) -5 D) $-\frac{25}{3}$ E) NOTA

24) Find the length of the line segment whose endpoints are (-5, 1) and (7, 6).

- A) 13 B) $\sqrt{119}$ C) $\sqrt{53}$ D) $\sqrt{29}$ E) NOTA

25) Multiply and simplify. $7\sqrt{56} \cdot 3\sqrt{\frac{1}{2}}$

- A) 588 B) 294 C) $84\sqrt{7}$ D) $42\sqrt{7}$ E) NOTA

26) Simplify. $\frac{\sqrt{24} - \sqrt{6}}{\sqrt{2}}$

- A) $2\sqrt{3} - 3$ B) $\sqrt{3}$ C) 3 D) 9 E) NOTA

27) Solve. $\sqrt{x} + 6 = x$

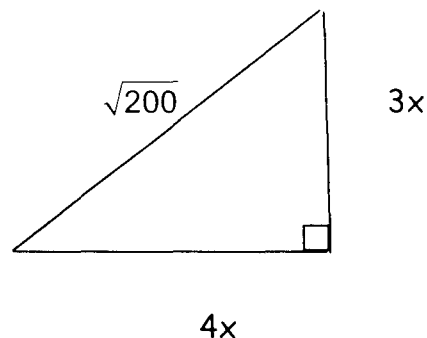
- A) {4, 9} B) {9} C) {4} D) \emptyset E) NOTA

28) Solve. $\frac{x-2}{2} = \frac{9}{x-2}$

- A) $-2 \pm 2\sqrt{3}$ B) $2 \pm 2\sqrt{3}$ C) $-2 \pm 3\sqrt{2}$ D) $2 \pm 3\sqrt{2}$ E) NOTA

29) Find the value of x if the following triangle is a right triangle.

- A) 8 B) ± 8 C) $2\sqrt{2}$
 D) $\pm 2\sqrt{2}$ E) NOTA



30) If $f(x) = -2x^2 + 6$, find $f(3)$.

- A) 42 B) 24 C) -12 D) -24 E) NOTA

INDIVIDUAL **SOLUTIONS** 2/24/2007

NO CALCULATOR

C 1. 2.9×10^4

B 2. Closure

A 3. Always

D 4. $r = 24, 5(24) = 120$

D 5. $5x - 7 = 3(2x + 5)$
 $5x - 7 = 6x + 15$
 $-22 = x$

B 6. $m = 3S + 4$

$$\begin{aligned} \frac{m + 18 + S + 18}{3S + 4 + 18 + S + 18} &= \frac{96}{96} \\ \frac{4S + 40}{4S} &= \frac{96}{56} \\ \frac{S}{S} &= \frac{14}{14} \\ m = 3(14) + 4 &= 46 \\ 14 + 46 &= 60 \end{aligned}$$

B 7. $t =$ time at 40 mph, $D = RT$

$$\begin{aligned} 40t + 25(8 - t) &= 275 \\ 40t + 200 - 25t &= 275 \\ 15t &= 75 \\ t &= 5 \\ 12 - 5 &= 7:00 \text{ am} \end{aligned}$$

C 8. $2 - |3 - 2h| < -5$

$$\begin{aligned} -|3 - 2h| &< -7 \\ |3 - 2h| &> 7 \end{aligned}$$

$$\begin{aligned} 3 - 2h > 7 & \quad -(3 - 2h) > 7 \\ -2h > 4 & \quad -3 + 2h > 7 \\ h < -2 & \quad \quad \quad 2h > 10 \\ h < -2 & \quad \quad \quad h > 5 \end{aligned}$$

U

C 9. 7

C 10. $\frac{1}{5} \times \frac{1}{4} = \frac{1}{20}$

A 11. $m = \frac{600 - 500}{90 - 30} = \frac{100}{60} = \frac{5}{3}$

$$y - 500 = \frac{5}{3}(x - 30)$$

$$y - 500 = \frac{5}{3}x - 50$$

$$y = \frac{5}{3}x + 450$$

D 12. x - int. : $-3 \rightarrow$ point $(-3, 0)$

$$3x - 2y = c$$

$$3(-3) - 2(0) = c$$

$$-9 = c$$

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

A 13. $\frac{(x^2)(6x^{-3}y^{-2})^2}{(3x^2y^{-3})^2} = \frac{(x^2)(36x^{-6}y^{-4})}{9x^4y^{-6}}$

$$= \frac{36x^{-4}y^{-4}}{9x^4y^{-6}}$$

$$= \frac{4y^2}{x^8}$$

B 14. $(x + y)^m \times (x + y)^n = (x + y)^{m+n}$

E 15.

$$50x^2 = 8(x + 3)^2$$

$$50x^2 = 8(x^2 + 6x + 9)$$

$$50x^2 = 8x^2 + 48x + 72$$

$$42x^2 - 48x - 72 = 0$$

$$7x^2 - 8x - 12 = 0$$

$$(7x + 6)(x - 2) = 0$$

$$x = -\frac{6}{7} \text{ reject}$$

$$x = 2 \times 2 = 4 \text{ square feet}$$

B 16. $x =$ acid to be added

$$1x + 15(.4) = .5(15 + x)$$

$$x + 6 = 7.5 + .5x$$

$$.5x = 1.5$$

$$x = 3$$

$$C 17. D = RT \rightarrow T = \frac{D}{R}$$

r = rate before stopping

$$\frac{32}{r} + \frac{96}{2r} = 5$$

$$64 + 96 = 10r$$

$$160 = 10r$$

$$16 = r$$

$$2(16) = 32$$

C 18. I and II only

$$B 19. 2w + 3g = 239$$

$$\underline{w + g = 92}$$

$$g = 92 - w$$

$$2w + 3(92 - w) = 239$$

$$2w + 279 - 3w = 239$$

$$-w = -37$$

$$w = 37$$

$$B 20. -4 + o = 10 \quad 7 + b = 17$$

$$o = 14 \quad b = 10$$

$$6 + c = 11 \quad -3 + d = -5$$

$$c = 5 \quad d = -2$$

$$14 + 10 + 5 + (-2) = 27$$

$$D 21. \frac{x(x+1)(x-1)}{(x-2)(x+1)} \times \frac{x(x+1)}{x(x-1)} \times \frac{2(x-2)}{2(x+1)} \equiv x$$

$$C 22. (x+5)(x-3) = 48$$

$$x^2 + 2x - 15 = 48$$

$$x^2 + 2x - 63 = 0$$

$$(x+9)(x-7) = 0$$

$$x = -9 \quad x = 7$$

$$4 \times 12$$

$$C 23. 4(3) + 3y = -3$$

$$12 + 3y = -3$$

$$3y = -15$$

$$y = -5$$

$$2(3) + (-5)a = 31$$

$$6 - 5a = 31 \quad -5a = 25$$

$$a = -5$$

$$A 24. \sqrt{(7+5)^2 + (6-1)^2} = \sqrt{144 + 25} = \sqrt{169} = 13$$

$$D 25. 21\sqrt{28} = 21\sqrt{2 \times 2 \times 7} = 42\sqrt{7}$$

$$B 26. \frac{\sqrt{24} - \sqrt{6}}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{48} - \sqrt{12}}{2} = \frac{4\sqrt{3} - 2\sqrt{3}}{2} = \frac{2\sqrt{3}}{2} = \sqrt{3}$$

$$B 27. (\sqrt{x})^2 = (x-6)^2$$

$$x = x^2 - 12x + 36$$

$$0 = x^2 - 13x + 36$$

$$0 = (x-9)(x-4)$$

$$x = 9, \quad x = 4 \text{ is extraneous}$$

$$D 28. \sqrt{(x-2)^2} = \sqrt{18}$$

$$x-2 = \pm 3\sqrt{2}$$

$$x = 2 \pm 3\sqrt{2}$$

$$C 29. 16x^2 + 9x^2 = 200$$

$$25x^2 = 200$$

$$\sqrt{x^2} = \sqrt{8}$$

$$x = 2\sqrt{2}$$

$$C 30. f(3) = -2(3)^2 + 6$$

$$= -18 + 6$$

$$= -12$$

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No Calculator

QUESTION #1

Find the values of A, B, C, and D

$$\begin{bmatrix} A & A-B \\ B+3C & C-2D \end{bmatrix} = \begin{bmatrix} 4 & 10 \\ 18 & 0 \end{bmatrix}$$

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QUESTION #2

Solve each equation.

$$\frac{2A + 8}{4} = \frac{3A - 9}{3}$$

$$3(B - 2) + 4B = 7 + B + 1 - B$$

$$2(C - 3) + 5(C + 4) = -7$$

D = The Middleton High School Mascot

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No Calculator

QUESTION #3

Let A = the sum of $1 + 2 + 3 + 4 + \dots + 97 + 98 + 99 + 100$

Clara picked a number and added 30% of 120 to the number.

The resulting sum was 96. Let B = Clara's number.

Matt can ride his bike at a steady rate of 33 miles per hour.

Let C = How many miles can he travel in $5\frac{1}{3}$ hours?

The operation @ is defined by $a @ b = \frac{1}{a} + \frac{1}{b}$. Let D = What is $2 @ 3$?

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QUESTION #4

Allison's jet is flying at an altitude of 30,000 feet. Her jet is descending at a rate of 25 feet per second. Ten seconds later, Emily's jet, flying at an altitude of 10,000 feet, begins to ascend at a rate of 15 feet per second.

A= How many seconds after Emily's jet begins to ascend will the jets be at the same height (though hopefully not at the same place!)? Round your answer to the nearest whole number.

Chelsea picked a number. She multiplied the number by 5, added 3 to the result, multiplied that result by 7, and ended up with 91. B = Chelsea's original number.

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QUESTION #5

Michael, Jerrod, and Logan recently went on vacations to Alaska, Colorado, and Hawaii (though not necessarily respectively). They all went to different places. If exactly one of the following statements is true, who went where?

i) Logan went to Alaska.

ii) Logan did not go to Colorado.

iii) Michael did not go to Colorado.

iv) Michael did not go to Hawaii.

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QUESTION #6

A= The largest Natural Number that makes the following compound inequality

true : $3n - 15 < 36$ and $3n - 15 > -36$

B = Solve for y . $\frac{y}{4} = \frac{y-1}{y}$

C = the measure of the larger angle.

The sum of the measures of complementary angles (two angles whose measures add to 90) are in a ratio of 2:3.

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QUESTION #7

Three vertices of a rectangle are located at $(-2, 1)$, $(6, 1)$, and $(-2, -5)$ and (x,y) . Find the following information.

A= the sum of the coordinates of the fourth vertex.

B = the perimeter of the rectangle.

C = the area of the rectangle.

D = the length of a diagonal.

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QUESTION #8

Use the equation $y = 3x^2 + 12x - 5$ for the questions below

A = If the equation above describes a line, then $A = 1$.

If the equation describes a parabola, then $A = 2$.

B = the y -intercept of the figure.

C= the sum of the coordinates (x,y) representing the minimum point (vertex) of the figure.

D= $f(-10)$ (the equation evaluated at -10)

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QUESTION #9

At the Tampa Zoo, a group of hungry gorillas were given a pile of $(2x + 9)^2$ fresh bananas.

After eating $[2(16x + 40)]$ of the bananas, no bananas were left.

A= How many bananas were in the original pile of bananas?

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QUESTION #10

Adam the Atom is zipping along a path defined by $5x - 2y = 7$ while Eve the Atom is zipping down a path defined by $4x - 3y = 26$.

A= the point where the two atoms will collide?

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QUESTION #11

$$(2x - 5)(x + 3) = Tx^2 + Ix + G$$

A = the difference of G and S

B = the product of T and S

$$(x + 5)(x - 5) = Ex^2 + Rx + S$$

C = the ratio of T and G

$$D = T + I + G + E + R + S =$$

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QUESTION #12

Factor completely. $x^3 - x^2 - 4x + 4$

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QUESTION #13

$$3\sqrt{80} - 5\sqrt{45} = A\sqrt{B}$$

$$(\sqrt{6} - \sqrt{3})(\sqrt{3} + \sqrt{18}) = C\sqrt{2} + D\sqrt{3} + E\sqrt{6} + F$$

How many of these statements is/are true?

i) $A > B$

ii) $C < D$

iii) $E \leq F$

iv) $BC < EF$

v) $C = |F|$

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QUESTION #14

Solve. $3\sqrt{x+13} = x+9$

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QUESTION #15

An alphametic is a puzzle in which each letter of a word stands for a digit. The same letter must be used to represent the same digit throughout the problem. Different digits must be represented by different letters. Solve this famous alphametic puzzle. Write the entire answer (addends and sum) on your answer sheet.

$$\begin{array}{r} \text{S E N D} \\ + \text{M O R E} \\ \hline \text{M O N E Y} \end{array}$$

TEAM SOLUTIONS NO Calculator

1. $A=4$ $4-B=10$
 $A=4$ $-B = 6$
 $B=-6$ $B = -6$
 $C=8$ $-6+3C=18$ $8-2D=0$
 $D=4$ $3C = 24$ $-2D=-8$
 $C=8$ $D=4$

2. $3(2A+8)=4(3A-9)$
 $A=10/3$ $6A+24=12A-36$
 $B=2$ $18A=60 \ggg A=10/3$
 $C=3$
 $D=Tigers$ $3B-6+4B=8$
 $7B-6=8$
 $7B=14 \gggg B=2$

$$2C-6+5C+20=-7$$

$$7C+14=-7$$

$$7C=21 \gggg C=3$$

3. A $(50)(101) = 5050$
 $A=5050$ B $(.3)(120) = 36 \quad 96 - 36 = 60$
 $B=60$ C $(5)(33) = 165 + (\frac{1}{3})(33) = 176$
 $C=176$ D $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$
 $D=5/6$

4. A. $29750-25s = 10000+15s$
 $A=494$ $29750 = 10000+40s$
 $B=2$ $19750 = 40s$
 $494 \approx s$

$$B \quad 7(5x+3) = 91$$

$$5x+3 = 13$$

$$5x = 10 \gggg x = 2$$

5. Michael went to Hawaii
 Logan went to Colorado
 Jerrad went to Alaska
 Choosing statements i, ii, or iv as true will create a contradiction, not with statement iii.

6. A. $3n-15 < 36 \cap 3n-15 > -36$
 $A=16$ $3n < 51 \cap 3n > -21$
 $B=2$ $n < 17 \cap n > -7 \Rightarrow 16$
 $C=54$ B. $y^2 = 4(y-1) \underline{D}$ C. $2x+3x=90$
 $y^2 = 4y-4$ $5x=90$
 $y^2 -4y+4=0$ $x=18$
 $(y-2)^2 = 0$ $3*18=54$
 $y = 2$

7. Coordinates are $x = 6, y = -5$ Sum = 1
 $A=1$ Perimeter = $6+8+6+8 = 28$
 $B=28$ Area = $6*8 = 48$
 $C=48$ $L = \sqrt{6^2 + 8^2} = 10$
 $D=10$

8. A. parabola, $a = 2$
 $A=2$ B. let $x=0, b=-5$
 $B=-5$ C. $(x,y) \quad x = \frac{-b}{2a} = \frac{-12}{2(3)} = -2$
 $C=-19$ $\frac{-b}{2a} = \frac{-12}{2 \cdot 3} = \frac{-12}{6} = -2$

$$f(-2) = 3 \cdot (-2)^2 + 12 \cdot (-2) - 5 = -17$$

$$-2 + -17 = -19$$

$D=175$ D. $y = 3(-10)^2 + 12(-10) - 5 =$
 $300-120-5=175$

9. $(2x+9)^2 - [2(16x+40)] = 0$
 $A=64$ $4x^2 + 36x + 81 - (32x+80) = 0$
 $4x^2 + 36x + 81 - 32x - 80 = 0$
 $4x^2 + 4x + 1 = 0$
 $(2x+1)^2 = 0$
 $x = -\frac{1}{2}$
 $[2(-\frac{1}{2})+9]^2 = 8^2 = 64$

$$\begin{array}{r}
 15. \quad 9567 \\
 + 1085 \\
 \hline
 10652
 \end{array}$$

10.

$$A. \left(-\frac{31}{7}, -\frac{102}{7}\right)$$

$$\begin{array}{r}
 -3(5x-2y=7) \quad -4(5x-2y=7) \\
 \underline{2(4x-3y=26)} \quad \underline{5(4x-3y=26)} \\
 -15x+6y=-21 \quad -20x+8y=-28 \\
 \underline{8x-6y=52} \quad \underline{20x-15y=130} \\
 -7x = 31 \quad -7y=102 \\
 x = -\frac{31}{7} \quad y = -\frac{102}{7}
 \end{array}$$

$$11. \quad (2x-5)(x+3) = 2x^2 + x - 15$$

$$A=10 \quad (x+5)(x-5) = x^2 + 0x - 25$$

$$B=-50$$

$$C= -2/15 \quad T=2, I=1, G=-15, E=1, R=0, S=-25,$$

$$D= -36 \quad A. -15-(-25)=10 \quad B. 2(-25)=-50$$

$$C. -2/15 \quad D. 2+1-15+1+0-25= -36$$

12.

$$A=(x-1)(x-2)(x+2)$$

$$x^2(x-1) - 4(x-1)$$

$$(x-1)(x^2-4)$$

$$(x-1)(x-2)(x+2)$$

$$13. \quad 3 \times 4\sqrt{5} - 5 \times 3\sqrt{5}$$

$$3 \quad 12\sqrt{5} - 15\sqrt{5} = -3\sqrt{5}$$

$$\sqrt{3 \times 2 \times 3} + \sqrt{3 \times 2 \times 3 \times 3 \times 2} - 3 -$$

$$\sqrt{3 \times 3 \times 2 \times 3} = 3\sqrt{2} + 6\sqrt{3} - 3 - 3\sqrt{6}$$

$$A=-3, B=5, C=3, D=6, E=-3, F=-3$$

$$\text{ii, iii, v and true} \Rightarrow 3$$

$$14. \quad (3\sqrt{x+13})^2 = (x+9)^2$$

$$3 \quad 9(x+13) = x^2+18x+81$$

$$9x+117 = x^2+18x+81$$

$$0 = x^2+9x-36$$

$$0 = (x+12)(x-3)$$

$$x = -12 \text{ (extraneous)}, 3$$

ERRATA

ALL ANSWERS Florida Invitational MIDDLETON TIGERS Feb 24, 2007

NO CALCULATORS!

	<i>none</i>	1	<i>none</i>	<i>none</i>	1	<i>none</i>	<i>none</i>	<i>none</i>	2
	Algebra I	Geometry	Algebra II	Pre-Calc	Calculus	Statistics	Theta Open	Alpha Open	Statistics Open
1	C	A	C	B	D	B	B	A	C
2	B	C	B	D	A	C	C	B	D
3	A	C	A	C	A	A	C	A	C
4	D	B	D	A	B	D	D	D	B
5	D	D	C	E	C	B	B	C	A
6	B	D	A	B	B E	C	D	C	D
7	B	D	B	D	D	D	A	C	C
8	C	A	B	B	B	C	C	A	C → B
9	C	A	C	B	C	C	D	D	A
10	C	C	C	A	A	A	C	B	D
11	A	B	C	C	D	C	B	A	A
12	D	C	D	C	C	B	B	B	B
13	A	A	A	D	D	B	B	B	A
14	B	A	B	C	B	A	A	C	C
15	E	C	C	B	A	D	A	B	D
16	B	D	A	D	C	C	B	A	D
17	C	B	C	A	A	B	B	C	B
18	C	C	C	C	A	D	D	D	A
19	B	B	C	A	D	D	A	D	A
20	B	B	B	D	D	B	D	B	C
21	D	C	D	C	A	B	B	B	D
22	C	D	C	B	C	A	D	C	C
23	C	C	B	A	C	A	A	D	BORE
24	A	D	C	C	A	B	D	D	D
25	D	B	C	B	D	A	B	C	C
26	B	C D	D	A	D	C	C	C	A → B
27	B	A	E	C	D	D	D	C	C
28	D	D	D	D	B	D	B	B	C
29	C	C	C	C	A	C	B	A	C
30	C	B	B	D	B	A	D	C	C