

Oahu Mathematics League
Meet VI
March 16, 2013

Answers for Meet VI

Event 1: ALGEBRA II — Polynomial Equations with Real Coefficients

- A. Pearl City $-6, -1, 2$
- B. St. Andrew's $-2, \frac{-3 \pm \sqrt{5}}{2}$
- C. Kapolei $k = -4$

Event 2: GEOMETRY — Plane Coordinate Geometry

- A. Kapolei $-\frac{3}{2}$
- B. Punahou $y = \frac{6}{5}x + \frac{9}{5}$
- C. St. Andrew's 3

Event 3: ALGEBRA I — Fractions and Mixed Expressions

- A. Punahou $\frac{4-x}{2x+3}$
- B. Kapolei $\frac{3x}{x^2-1}$ or $\frac{3x}{(x+1)(x-1)}$
- C. Pearl City $-2x^2 + 8x - 7$

Event 4: ANALYTIC GEOMETRY — Parabolas, Ellipses, and Hyperbolas

- A. St. Andrew's $\left(-1, -\frac{39}{8}\right)$
- B. Pearl City $(y-1)^2 = x-1, (y-2)^2 = -(x-2)$
- C. Punahou $y = \sqrt{3}x + 2 + \sqrt{3}$ and $y = -\sqrt{3}x + 2 - \sqrt{3}$

Event 5: GEOMETRY — Arc Lengths and Circular Regions

- A. Kapolei $\frac{45}{2}$
- B. Kapolei $148 - 25\pi$
- C. Punahou $16!$

Event 6: ALGEBRA II — Permutations and Combinations

- A. Kapolei 6
- B. Punahou 805
- C. Pearl City 480

Team Question

- Kapolei 3535

Oahu Mathematics League
Meet VI
March 3, 2012

Answers for Meet VI

Event 1: ALGEBRA II — Polynomial Equations with Real Coefficients

- A. Sacred Hearts $\pm 3i, \pm 2i$
B. Kamehameha $2 + 4i, 4$
C. Aiea $k = 21, m = 34$

Event 2: GEOMETRY — Plane Coordinate Geometry

- A. Aiea $(0, 0), (10, 0)$
B. Sacred Hearts $10x - 8y = -7$
C. Kamehameha $\left(\frac{7}{3}, \frac{2}{3}\right)$

Event 3: ALGEBRA I — Fractions and Mixed Expressions

- A. Aiea $\frac{x(2x - 3)}{6}$
B. Aiea $\frac{x^2 - 5}{x}$
C. Aiea $\frac{5x - 18}{x^2 - 2x + 4}$

Event 4: ANALYTIC GEOMETRY — Parabolas, Ellipses, and Hyperbolas

- A. Aiea $y^2 - 12x = 0$
B. Kamehameha $\frac{(x + 1)^2}{12} + \frac{(y - 2)^2}{48} = 1$
C. Kamehameha $\left(2, 1 + 2\sqrt{13}\right), \left(2, 1 - 2\sqrt{13}\right)$

Event 5: GEOMETRY — Arc Length and Circular Regions

- A. Sacred Hearts $\frac{59\pi}{15}$
B. Kamehameha $\frac{12}{7}$
C. Aiea $64 - 64\pi + 32\pi\sqrt{2}$

Event 6: ALGEBRA II — Permutations and Combinations

- A. Aiea 100
B. Kamehameha 708
C. Kamehameha 42,336,000

Team Question

- Aiea 15,876

Oahu Mathematics League
Meet VI
March 5, 2011

Answers for Meet VI

Event 1: ALGEBRA II — Polynomial Equations with Real Coefficients

- A. Maryknoll $-2, 3i, -3i$
B. Moanalua $1-i, 7, -4$
C. Moanalua $\frac{41}{150}$

Event 2: GEOMETRY — Plane Coordinate Geometry

- A. Mililani 40
B. Moanalua $y = -\frac{1}{2}x + 4$
C. Maryknoll $y = -\frac{1}{3}x + 4$

Event 3: ALGEBRA I — Fractions and Mixed Expressions

- A. Mililani $\frac{x+y}{x}$
B. Moanalua $\frac{2x-3}{x-3}$
C. Maryknoll $\frac{-x(x+1)}{3}$

Event 4: ANALYTIC GEOMETRY — Parabolas, Ellipses, and Hyperbolas

- A. Mililani $y^2 + 8x - 8y + 8 = 0$
B. Moanalua $(0, 5), (0, -1)$
C. Mililani $20x^2 - 5y^2 - 160x + 256 = 0$

Event 5: GEOMETRY — Arc Lengths and Circular Regions

- A. Moanalua $\frac{13\pi}{3}$
B. Maryknoll $\frac{16\pi - 16\sqrt{3}}{3}$
C. Maryknoll 3π

Event 6: ALGEBRA II — Permutations and Combinations

- A. Mililani 105
B. Mililani 1440
C. Moanalua 665

Team Question

- Mililani $\frac{16}{7}$

Oahu Mathematics League

Meet VI

March 6, 2010

Answers for Meet VIEvent 1: ALGEBRA II — Polynomial Equations with Real Coefficients

- A. Damien $-2i, -2, 4$
- B. Waipahu B, D
- C. McKinley $k = -11$

Event 2: GEOMETRY — Plane Coordinate Geometry

- A. McKinley $3\sqrt{13}$
- B. Damien $5 + \sqrt{13} + \sqrt{26}$
- C. Waipahu $(4, -1 + 2\sqrt{3}), \left(\frac{5}{2}, -1 + \frac{3\sqrt{3}}{2}\right)$

Event 3: ALGEBRA I — Fractions and Mixed Expressions

- A. Damien $\frac{2x+1}{x(x+2)}$ or $\frac{2x+1}{x^2+2x}$
- B. McKinley $\frac{x^2(x-1)}{x+1}$ or $\frac{x^3-x^2}{x+1}$
- C. McKinley 3, 4, 5, 6, 8, 10, 14, 26

Event 4: ANALYTIC GEOMETRY — Parabolas, Ellipses, and Hyperbolas

- A. Damien $\frac{(x-4)^2}{16} + \frac{(y-3)^2}{9} = 1$
- B. Waipahu $y^2 + 4x + 4y = 0$
- C. McKinley $25x^2 - 24y^2 - 200x + 48y + 976 = 0$

Event 5: GEOMETRY — Arc Lengths and Circular Regions

- A. Waipahu 36π
- B. McKinley $96\sqrt{3} - 48\pi$
- C. Waipahu $1800\sqrt{3} + 1200\pi$

Event 6: ALGEBRA II — Permutations and Combinations

- A. Waipahu 181
- B. Damien 26
- C. McKinley 7272

Team Question

- Damien $\frac{2405}{84}$

Oahu Mathematics League

Meet VI

March 14, 2009

Answers for Meet VI

Event 1: ALGEBRA II — Polynomial Equations with Real Coefficients

- A. Hanalani $-2, 3, 4$
B. Hanalani $-3, 2, 1 \pm 2\sqrt{3}i$
C. Kaimuki $p = 3, q = 0$

Event 2: GEOMETRY — Plane Coordinate Geometry

- A. Kalaheo $(-1, -1)$
B. Iolani $y = \frac{3}{4}x$
C. Iolani $\left(2 + \frac{\sqrt{3}}{2}, \frac{1}{2} - 2\sqrt{3}\right), \left(2 - \frac{\sqrt{3}}{2}, \frac{1}{2} + 2\sqrt{3}\right),$

Event 3: ALGEBRA I — Fractions and Mixed Expressions

- A. Kalaheo $x + y$
B. Kaimuki $\frac{x}{x+3}$
C. Iolani $\frac{-5}{3x-5}$

Event 4: ANALYTIC GEOMETRY — Parabolas, Ellipses, and Hyperbolas

- A. Kaimuki $x^2 - 4y = 0$
B. Kaimuki $6\sqrt{7}$
C. Iolani $(0, 0), (0, 12)$

Event 5: GEOMETRY — Arc Length and Circular Regions

- A. Kalaheo $\frac{3\pi}{8}$
B. Iolani $8\pi\sqrt{2} - 4\pi$ or $4\pi(2\sqrt{2} - 1)$
C. Kalaheo $30\pi - 9\sqrt{3}$

Event 6: ALGEBRA II — Permutations and Combinations

- A. Kalaheo 8
B. Iolani 105
C. Iolani 2520

Team Question

Hanalani	Gary	Finn	Chemistry	130	5' 9" or 69"
	Jeff	Peck	English	190	5' 11" or 71"
	Eric	Stone	Mathematics	150	5' 7" or 67"
	Harry	Vogel	French	170	5' 5" or 65"

Oahu Mathematics League
Meet 6
March 8, 2008

Answers for Meet 6

Event 1: Algebra II – Polynomial Equations with Real Coefficients

- A. Campbell 4
B. Kalaheo $3, 4, -5 \pm \sqrt{6}i$
C. Hanalani 24

Event 2: GEOMETRY – Plane Coordinate Geometry

- A. Campbell $y = \frac{-5}{3}x + 3$
B. Kalaheo 5
C. Hanalani $(\frac{16}{5}, \frac{22}{5})$ or $(3.2, 4.4)$ or equivalent

Event 3: ALGEBRA I – Fractions and Mixed Expressions

- A. Hanalani 2
B. Kalaheo $\frac{2x^2 + 6x}{x + 2y}$ or $\frac{2x(x + 3)}{x + 2y}$
C. Hanalani $\frac{5x + 9}{4x + 4}$ or $\frac{5x + 9}{4(x + 1)}$

Event 4: ANALYTIC GEOMETRY – Parabola, Ellipse, and Hyperbola

- A. Campbell (1, 0)
B. Hanalani $\frac{(y - 2)^2}{81} - \frac{(x - 2)^2}{144} = 1$
C. Campbell $\frac{1}{13}$

Event 5: GEOMETRY – Arc Length and Circular Regions

- A. Campbell $2\pi - \sqrt{3}$
B. Kalaheo 4
C. Hanalani $\frac{8\sqrt{3} - 1}{6}\pi - \sqrt{3}$ or $(\frac{4\sqrt{3}}{3} - \frac{1}{6})\pi - \sqrt{3}$

Event 6: ALGEBRA II – Permutations and Combinations

- A. Hanalani ~~48~~ 90
B. Hanalani ~~90~~ 48
C. Hanalani ~~48~~ 47

Team Question

- Hanalani 305-748-6912

Oahu Mathematics League

Meet 6

March 17, 2007

Answers for Meet 6

Event 1: Algebra II – Polynomial Equations with Real Coefficients

- A. Hawaii Baptist $-10 - 20$
B. Lahainaluna $x^3 + 33x + 196 = 0$
C. Lahainaluna -27

Event 2: GEOMETRY – Plane Coordinate Geometry

- A. Hawaii Baptist $(-6, -6), (3, 3)$
B. Hawaii Baptist $D(-2, 2 + 2\sqrt{3}), E(6, 2 + 2\sqrt{3})$
C. Lahainaluna ~~$(\frac{41}{17}, \frac{1}{17})$~~ $(\frac{1}{7}, \frac{11}{7})$

Event 3: ALGEBRA I – Fractions and Mixed Expressions

- A. Lahainaluna $\frac{3(y+3)}{y(y-3)}$ or $\frac{3y+9}{y^2-3y}$
B. Lahainaluna $x^2 - 4$ or $(x+2)(x-2)$
C. St. Andrew's $x - 3$

Event 4: ANALYTIC GEOMETRY – Parabola, Ellipse, and Hyperbola

- A. Roosevelt 4
B. St. Andrew's $(-6, 18)$
C. Lahainaluna $80\sqrt{15}$ in. or $\frac{20\sqrt{15}}{3}$ ft.

Event 5: GEOMETRY – Arc Length and Circular Regions

- A. Lahainaluna $\frac{18\pi}{5}$ or 3.6π or $3\frac{3}{5}\pi$
B. Lahainaluna $\frac{1}{2}$ or 0.5
C. Hawaii Baptist $\frac{96\pi - 48\sqrt{3}}{\pi^2}$

Event 6: Algebra II – Permutations and Combinations

- A. St. Andrew's 146
D. St. Andrew's 186
E. Hawaii Baptist 1045

Team Question

- St. Andrew's $Einstein$

Oahu Mathematics League

Meet 6

March 11, 2006

Answers for Meet 6

Event 1: Algebra II – Polynomial Equations with Real Coefficients

- A. St. Francis $2x^5 + 2x^4 - 2x - 2$
 B. Punahou $f(x) = 2x^3 - 2x^2 - 14x + 30$
 C. Hawaii Baptist $-2, 1, \frac{1}{2} \pm \frac{\sqrt{7}}{2}i$ or $-2, 1, \frac{1}{2} \pm i\frac{\sqrt{7}}{2}$ or $-2, 1, \frac{1 \pm i\sqrt{7}}{2}$

Event 2: Geometry – Plane Coordinate Geometry

- A. Pearl City $\left(\frac{7}{2}, -1\right)$
 B. Punahou $\left(\frac{43}{24}, 0\right)$
 C. St. Francis $3x - 2y - 13 = 0$

Event 3: Algebra I – Fractions and Mixed Expressions

- A. Pearl City $\frac{-4}{x-4}$ or $\frac{4}{4-x}$
 B. St. Francis $\frac{-1}{y(3x+5)}$
 C. Hawaii Baptist $\frac{x-u}{(x+u)^2}$

Event 4: Analytic Geometry – Parabola, Ellipse, and Hyperbola

- A. St. Francis 32
 B. Pearl City 42
 C. St. Francis $20x^2 + 36y^2 - 80x - 360y + 935 = 0$

Event 5: Geometry – Arc Length and Circular Regions

- A. Punahou $6\sqrt{5}\pi$ or $6\pi\sqrt{5}$
 B. Pearl City $\frac{16\sqrt{3}}{3}$
 C. Hawaii Baptist $\frac{48\sqrt{3} - 16\pi}{9}$ or $\frac{16(3\sqrt{3} - \pi)}{9}$ or $\frac{16\sqrt{3}}{3} - \frac{16\pi}{9}$

Event 6: Algebra II – Permutations and Combinations

- A. St. Francis 750
 B. Hawaii Baptist 720
 C. Pearl City 4480

Team Question

Punahou 158

Oahu Mathematics League

Meet 6

March 12, 2005

Answers for Meet 6

Event 1: Algebra II – Polynomial Equations with Real Coefficients

- A. Maui $3, \pm \frac{\sqrt{14}}{2}$
 B. Molokai -100
 C. Mililani $4 + 3i, 1 \pm \sqrt{3}$

Event 2: Geometry – Plane Coordinate Geometry

- A. Molokai (1, 1)
 B. Mililani $\frac{\sqrt{445}}{2}$
 C. Molokai $\left(\frac{1}{2}, 0\right)$

Event 3: Algebra I – Fractions and Mixed Expressions

- A. Waipahu $\frac{3x^2 - 5}{x^2 - 1}$ or $\frac{3x^2 - 5}{(x+1)(x-1)}$
 B. Mililani $\frac{-x^2 - x + 8}{x^2 + 8x + 16}$ or $\frac{-x^2 - x + 8}{(x+4)^2}$
 C. Molokai $\frac{25x(x+3)}{x-5}$ or $\frac{25x^2 + 75x}{x-5}$

Event 4: Analytic Geometry – Parabola, Ellipse, and Hyperbola

- A. Mililani (-5, -1), (-5, 7)
 B. Maui (-4, 0), (-2, 0)
 C. Mililani $\frac{(y-5)^2}{36} - \frac{(x+3)^2}{324} = 1$

Event 5: Geometry – Arc Length and Circular Regions

- A. Maui $18\sqrt{3} + 24\pi$
 B. Maui $\frac{625\pi}{16} - 48$ or $\frac{625\pi - 768}{16}$
 C. Waipahu $8 + 8\sqrt{2} + \pi$ sq. cm

Event 6: Algebra II – Permutations and Combinations

- A. Maui 32
 B. Waipahu 3430
 C. Waipahu 99

Team Question

Waipahu -112



Oahu Mathematics League

Meet 6

March 13, 2004

Answers for Meet 6

Event 1: Algebra II – Polynomial Equations with Real Coefficients

- A. Mid-Pacific $-\frac{1}{6}$
B. HBA $-\sqrt{5}, \sqrt{5}, 1, 4$
C. Education Lab $-\frac{9}{16}$

Event 2: Geometry – Plane Coordinate Geometry

- A. Mid-Pacific $\frac{8}{3}$ or $2\frac{2}{3}$
B. Education Lab $y = \frac{7}{2}x - 19$
C. Kaiser $(-1, -1)$

Event 3: Analytic Geometry – Parabola, Ellipse, and Hyperbola

- A. Kaiser $(4, -6)$
B. Education Lab 12
C. Education Lab $25x^2 + 16y^2 - 100x + 96y - 156 = 0$

Event 4: Algebra I – Fractions and Mixed Expressions

- A. Education Lab $\frac{-7x-4}{2x-10}$ or $\frac{7x+4}{10-2x}$ or $\frac{7x+4}{2(5-x)}$
B. HBA $\frac{x+1}{x+4}$
C. Mid-Pacific $\frac{14x^2-22x+3}{-4x^2+10x-4}$ or $\frac{-14x^2+22x-3}{4x^2-10x+4}$ or $\frac{14x^2-22x+3}{-2(2x-1)(x-2)}$

Event 5: Algebra II – Permutations and Combinations

- A. Education Lab 720
B. Mid-Pacific 119
C. HBA 7,110,000

Event 6: Geometry – Arc Length and Circular Regions

- A. Mid-Pacific 17.5 or $\frac{35}{2}$
B. HBA $64\pi + 160$ sq. yards
C. Kaiser 8

Team Question

Mid-Pacific Kristen: 25 years old
Jana: 27 years old
Amy: 24 years old

Oahu Mathematics League

Meet 6

~~March 9, 2002~~ MARCH 15, 2003

Answers for Meet 6

Event 1: Algebra II – Polynomial Equations with Real Coefficients

- A. St. Andrews 8
B. University 11
C. St. Andrews $\pm\sqrt{7}, -5, 8$

Event 2: Geometry – Plane Coordinate Geometry

- A. University (9, 1)
B. Waipahu $x + y - 7 = 0$ or $-x - y + 7 = 0$
C. St. Andrews $(\frac{9}{2}, 4), (\frac{9}{2}, 14)$ or $(4\frac{1}{2}, 4), (4\frac{1}{2}, 14)$

Event 3: Analytic Geometry – Parabola, Ellipse, and Hyperbola

- A. University $\frac{(x+1)^2}{4} + \frac{(y-5)^2}{9} = 1$
B. Waipahu $x^2 - y^2 - 6x + 14y - 48 = 0$
C. St. Andrews $y - 6 = 0$

Event 4: Algebra I – Fractions and Mixed Expressions

- A. University $x - 3$
B. St. Andrews $\frac{7}{2(x-2)}$ or $\frac{7}{2x-4}$
C. Waipahu $\frac{2}{x-4}$

Event 5: Algebra II – Permutations and Combinations

- A. Waipahu 720
B. Waipahu 1,036,800
C. University 1,058,400

Event 6: Geometry – Arc Length and Circular Regions

- A. University $12\sqrt{3}$
B. St. Andrews 205°
C. St. Andrews $\frac{128\pi}{3} - 32\sqrt{3}$ or $\frac{128\pi - 96\sqrt{3}}{3}$

Team Question

- Waipahu 18

Oahu Mathematics League

Meet 6

March 9, 2002

Answers for Meet 6

Event 1: Algebra II – Polynomial Equations with Real Coefficients

- A. Mid-Pacific $x^3 - 4x^2 + 13x = 0$
B. Sacred Hearts $-6, -\frac{1}{2}, 1$
C. Mid-Pacific $-\frac{3}{5}$

Event 2: Geometry – Plane Coordinate Geometry

- A. Sacred Hearts 20
B. Punahou $-\frac{18}{5}$ or $-3\frac{3}{5}$ or -3.6
C. Punahou $\frac{23\sqrt{2}}{5}$

Event 3: Analytic Geometry – Parabola, Ellipse, and Hyperbola

- A. Sacred Hearts $(1, -\frac{3}{2})$, ellipse
B. Mid-Pacific 9 inches
C. Moanalua $(1, 15)$

Event 4: Algebra I – Fractions and Mixed Expressions

- A. Mid-Pacific $\frac{-10x + 8}{3x - 6}$ or equivalent form
B. Sacred Hearts $\frac{x - 4}{x - 2}$
C. Mid-Pacific $\frac{-2a^2 + 9}{3a + 9}$ or equivalent form

Event 5: Algebra II – Permutations and Combinations

- A. Mid-Pacific 12
B. Moanalua 59,582
C. Sacred Hearts 6750

Event 6: Geometry – Arc Length and Circular Regions

- A. Moanalua 14π
B. Mid-Pacific $\frac{75\sqrt{3}}{2}$ cm²
C. Punahou $128\pi - 192\sqrt{3}$ m²

Team Question

- Punahou 158

OAHU MATHEMATICS LEAGUE

Meet 6

March 10, 2001

Answers for Meet 6

Event 1: ALGEBRA II - Polynomial Equations with Real Coefficients

Roosevelt $\pm\sqrt{6}$
Kaiser $\pm 2, 1 \pm 2i$
Roosevelt -27

Event 2: GEOMETRY - Plane Coordinate Geometry

Roosevelt 12
Waipahu B(7, 7)
Waipahu $10x - 8y = 9$

Event 3: ANALYTIC GEOMETRY - Parabola, Ellipse, Hyperbola

Roosevelt $\frac{(x-5)^2}{25} + \frac{(y-6)^2}{36} = 1$

Waipahu $\frac{(y+2)^2}{36} - \frac{(x-3)^2}{9} = 1$

Kaiser $y^2 + 14x - 6y - 47 = 0$

Event 4: ALGEBRA I - Fractions and Mixed Expressions

Kaiser $\frac{-8}{x(x-2)}$

Waipahu $\frac{x+2}{x}$ or $\frac{2}{x} + 1$

Kaiser $\frac{3-6x}{3-4x}$ or $\frac{6x-3}{4x-3}$

Event 5: ALGEBRA II - Determinants and Matrices

Waipahu $x = -10, y = 20$

Kaiser $\begin{bmatrix} 1 & 5 \\ 3 & -2 \end{bmatrix}$

Waipahu $-\frac{1}{4}$

Event 6: GEOMETRY - Arc Length and Circular Regions

Kaiser $\frac{50\pi}{9}$

Waipahu $\frac{160\pi - 48\sqrt{3}}{3}$ or $\frac{160\pi}{3} - 16\sqrt{3}$

Roosevelt $12\sqrt{3} + 14\pi$

Team Question

Roosevelt $\frac{3}{7}$

OAHU MATHEMATICS LEAGUE

Meet 6

March 11, 2000

Answers for Meet 6

Event 1: ALGEBRA II - Polynomial Equations with Real Coefficients

- A. Iolani -15
B. Punahou -3, 4, -1, ~~2i~~
C. Punahou -3

Event 2: GEOMETRY - Plane Coordinate Geometry

- A. Iolani (5, 3)
B. Punahou $y = \frac{1}{2}x + \frac{1}{4}$
C. Punahou $\left(\frac{-11}{3}, \frac{-16}{3}\right)$

Event 3: ANALYTIC GEOMETRY - Parabola, Ellipse, and Hyperbola

- A. Iolani $\left(2, \frac{5}{2}\right)$
B. Castle $\frac{(x+1)^2}{25} + \frac{(y-4)^2}{225} = 1$
C. Iolani $3x^2 + 4y^2 - 12x - 8y - 32 = 0$

Event 4: ALGEBRA I - Fractions and Mixed Expressions

- A. Punahou 1
B. Iolani $\frac{5-3x}{3-2x}$ or $\frac{3x-5}{2x-3}$
C. Castle -1, 0, 1, 4, 7, 16

Event 5: ALGEBRA II - Matrices and Determinants

- A. Iolani -4
B. Iolani -16
C. Punahou $\begin{bmatrix} -1 & 2 \\ 3 & -5 \end{bmatrix}$

Event 6: GEOMETRY - Arc Length and Circular Regions

- A. Castle $\frac{32\pi}{3}$ or $10\frac{2}{3}\pi$
B. Iolani $\frac{392\pi}{3}$ or $130\frac{2}{3}\pi$
C. Punahou $63\sqrt{3} - 12\pi$

Team Question

Oahu Mathematics League

Meet 6

March 13, 1999

Answers for Meet 6

Event 1: Algebra II - Polynomial Equations with Real Coefficients

A. -6

B. $x^4 - 4x^3 + 2x^2 + 12x - 15 = 0$ or $-x^4 + 4x^3 - 2x^2 - 12x + 15 = 0$

C. $\frac{3}{2}, -\frac{5}{4} \pm \frac{\sqrt{7}}{4}i$

Event 2: Geometry - Plane Coordinate Geometry

A. 16

B. $4x - y + 1 = 0$

C. $(\frac{7}{2}, \frac{19}{2})$

Event 3: Analytic Geometry - Parabola, Ellipse, and Hyperbola

A. $2\sqrt{15}$ units

B. $\frac{9}{32}$ sq. units

C. $\frac{(x-2)^2}{4} - \frac{(y-3)^2}{4} = 1$

Event 4: Algebra I - Fractions and Mixed Expressions

A. $\frac{-3x^2+10x+20}{x^2-9}$ or $\frac{3x^2-10x-20}{9-x^2}$

B. $\frac{a-3b}{c}$

C. $-\frac{1}{2}$

Event 5: Algebra II - Matrices and Determinants

A. $\frac{1}{17}$

B. $\begin{bmatrix} -\frac{3}{5} & -\frac{4}{3} \\ 1 & \frac{5}{3} \end{bmatrix}$

C. $\begin{bmatrix} 3 & -1 \\ 1 & 2 \end{bmatrix}$

Event 6: Geometry - Arc Length and Circular Regions

A. $\sqrt{3}$ cm

B. $30\pi + 9\sqrt{3}$ sq. units

C. $600 - 144\pi$ sq. units

Team Question:

10698



OAHU MATHEMATICS LEAGUE

Answers for Meet 6

March 14, 1998

Event 1: Algebra II – Polynomial Equations with Real Coefficients

- A. $-1, \frac{-3}{2} \pm \frac{\sqrt{11}}{2}i$ or $-1, \frac{-3}{2} \pm \frac{\sqrt{11}i}{2}$
 B. $4x^3 + 4x^2 - x - 1 = 0$ or any equivalent equation
 C. 225

Event 2: Geometry – Plane Coordinate Geometry

- A. $(-1, 0), (7, 0)$
 B. $\frac{8}{11}$
 C. $y = -\frac{11}{8}x + \frac{9}{4}, -2 \leq x \leq 2$

Event 3: Analytic Geometry – Parabola, Ellipse, and Hyperbola

- A. $2x + 5 = 0$
 B. $2x^2 + 5y^2 - 30 = 0$
 C. $x^2 - 4y^2 + 4x + 24y - 28 = 0$ -or- $-x^2 + 4y^2 - 4x - 24y + 28 = 0$

Event 4: Algebra I – Fractions and Mixed Expressions

- A. $\frac{-5(x-1)}{(x+1)^2}$ or $\frac{5(1-x)}{(x+1)^2}$ or any equivalent expression
 B. $\frac{x^2 - 4x - 27}{x^2 - x - 6}$ or $\frac{x^2 - 4x - 27}{(x+2)(x-3)}$
 C. $\frac{1}{x-y}$

Event 5: Algebra II – Matrices and Determinants

- A. -5
 B. $\begin{bmatrix} 0 & -2 \\ \frac{1}{2} & \frac{5}{2} \end{bmatrix}$
 C. 3, 7

Event 6: Geometry – Arc Length and Circular Regions

- A. 48π
 B. $(100\pi - 192) \text{ cm}^2$
 C. $\sqrt{2} - 1 - \frac{9\pi}{8} + \frac{3\pi\sqrt{2}}{4}$

Team 2401

ANSWERS

Event 1: ALGEBRA II - Polynomial equations with real coefficients

- A. -50
- B. $x^3 + 33x + 196 = 0$
- C. -27

Event 2: GEOMETRY - Plane coordinate geometry

- A. $\frac{3}{7}$
- B. $2x + 7y - 35 = 0$
- C. $\left(\frac{41}{17}, \frac{1}{17}\right)$

Event 3: ANALYTIC GEOMETRY - Parabola, ellipse, and hyperbola

- A. $\left(-\frac{3}{8}, -2\right)$
- B. $5x^2 + y^2 + 20x - 6y + 9 = 0$
- C. $80\sqrt{15}$

Event 4: ALGEBRA I - Fractions and mixed expressions

- A. $\frac{3(y+3)}{y(y-3)}$ or $\frac{3y+9}{y^2-3y}$
- B. $x^2 - 4$ or $(x+2)(x-2)$
- C. $\frac{-2x^3+5}{2x^3-1}$ or $\frac{2x^3-5}{1-2x^3}$

Event 5: ALGEBRA II - Matrices and determinants

- A. $\begin{bmatrix} 1 & 0 \\ 80 & 81 \end{bmatrix}$
- B. 10
- C. $\begin{bmatrix} 3 & 1 \\ -2 & 4 \end{bmatrix}$

Event 6: GEOMETRY - Arc length and circular regions

- A. $\frac{18\pi}{5}$
- B. $\frac{1}{2}$
- C. $432\sqrt{3} - 144\pi$

Event: TEAM