

Interschool Answers

1. 2340.96

2. 2592

3. Answers may vary. $\frac{p}{q} = \frac{4m+1}{4n+3}$ with m and n being elements of the integers..

4. 4017!/2008!

5. 3.5 or $7/2$

6. 18

7. Answers may vary. Acceptable answers include constant sequences.

8. 64.42

9. 0

10. 1

11. $-\binom{2009}{508}$

12a. $\pm \frac{\sqrt{3}}{3}$ (just $\frac{\sqrt{3}}{3}$ was also accepted)

12b. Simpson's Rule

13. (200, 375, 425)

14. $\left(\frac{1}{x} + x^2\right)^n$

15. 6755

16. 135721

17. 1. Ra6+ (Kxa6) 2. Nc5+ (Ka5) 3. b4#. 1. Re5+ is incorrect because of 1. ... Bxe5.

18. 1. Qxf7+ (Rxf7) 2. Ng6+ (Kg8) 3. Rh8#

19. 1. Re8+ (Rxe8) 2. Nf7+ (Kg8) 3. Nh6+ (Kh8) 4. Qg8+ (Rxc8) 5. Nf7# (Moves 1. and 2. may be interchanged.)

20. 112355961331029

21. Isaac Newton

$$22. \left(\pm \sqrt{\frac{9 + \sqrt{41}}{4}}, \pm \sqrt{\frac{-3 + \sqrt{41}}{4}} \right)$$

23a. 18000009000

$$23b. 18n^3 - 54n^2 + 63n - 27$$

24. 20365011074

$$25. \frac{3r^2\sqrt{3}}{8}$$

26. 40755

27. (1, 1, 10); (-2, 7, -2); (-12/5, 21/4, -15/7)

28. 3524578

29. k is divisible by 9.

30. 6.07

31. $h/4$

32. 86

33. =, Robert Recorde (Many schools wrote out the quotation after that, and this was also acceptable)

34. No maximum, or ∞

$$35. \text{Answers may vary. } 1 + \frac{1}{3} + \frac{1}{2} + \frac{1}{7} + \frac{1}{6} + \frac{1}{5} + \frac{1}{4} + \frac{1}{15} + \frac{1}{14} + \frac{1}{13} (+ \dots + \frac{1}{8} + \frac{1}{15} + \frac{1}{14} + \dots)$$

36. Answers may vary

37. Strong pi

38. $\frac{1}{4}$

39. S = 1, P = 0, A = 3, N = 8, I = 5, H = 6, L = 9, G = 2, E = 7, O = 4

40. No, answers may vary. Liouville's constant is a transcendental (thus irrational) that contains only 1s

and 0s. It is defined as $\sum_{n=1}^{\infty} 10^{-n!} = .110001000000000000000001\dots$

41. 6.5 or 13/2

42. 1/13

43. $R^2\left(\frac{\pi-1}{2}\right)$

44. 2.95

45. .79

46.

1	5	2	3	4	6
5	1	6	4	2	3
6	4	3	1	5	2
2	3	1	5	6	4
4	6	5	2	3	1
3	2	4	6	1	5

47. The acceptable answer choices are A, B, C, and D, since with the information given, NONE of the numbers given are roots. The question is poorly worded because the full polynomial is given, without using variable coefficients. It doesn't specify to use the rational root theorem either.

48. 275

49. 8π

50. (0,0); (8, 4); (-1/2, 1/2); (-1/2, -1/2); (-1/8, -1/16)

$$x = -\frac{\sqrt{3\sqrt{41} + 7}}{\sqrt{2}\sqrt{\sqrt{41} - 3}}, y = \frac{\sqrt{\sqrt{41} - 3}}{2}$$

$$x = \frac{\sqrt{3\sqrt{41} + 7}}{\sqrt{2}\sqrt{\sqrt{41} - 3}}, y = \frac{\sqrt{\sqrt{41} - 3}}{2}$$

56. zero saw eight and he felt
That the latter was wearing a belt
The belt fits too tightly
And looks quite unsightly
It will surely be leaving a welt.

57. The BUTTERFLY Effect: FRACTALS in NATURE

$$12. \left(\frac{-\sqrt{3\sqrt{41}+7}}{\sqrt{2}\sqrt{\sqrt{41}-3}}, -\frac{\sqrt{\sqrt{41}-3}}{2} \right), \left(\frac{\sqrt{3\sqrt{41}+7}}{\sqrt{2}\sqrt{\sqrt{41}-3}}, -\frac{\sqrt{\sqrt{41}-3}}{2} \right),$$

$$\left(\frac{-\sqrt{3\sqrt{41}+7}}{\sqrt{2}\sqrt{\sqrt{41}-3}}, \frac{\sqrt{\sqrt{41}-3}}{2} \right), \left(\frac{\sqrt{3\sqrt{41}+7}}{\sqrt{2}\sqrt{\sqrt{41}-3}}, \frac{\sqrt{\sqrt{41}-3}}{2} \right)$$

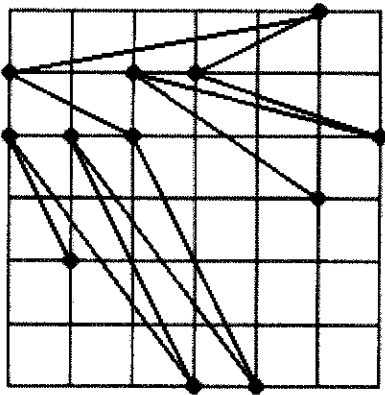
7. According to FAMAT rules, if there exists more than one answer from the answer choices, including if one answer is in a more simplified form than another, they will both be marked as correct.

	R	W
1 Anthony	I	I
8 Oscar	III III ?	III 1/2
7 Oscar	II III	III (minus <u> </u>) 1/2
1 1/2 Jaime	1 1/2	II
1/2 Romo	1/2	
1 Yeseni	I	I
1 Ben	I	
1 Valle	I	
0 MAYO		I
1/2 GABE	1/8	7/10
3 Andy	III	II
3 Astley	III	
2 Natalie	II	
1 Manny	I	
1 Ara	I	
1 Ten.	I	

33

	R	W
-1 Braden	I	
0 Claud.		II

51.



52. {1, 4, 6, 7, 10, 11, 13, 16} or {2, 3, 5, 8, 9, 12, 14, 15}

53. $\frac{(\sqrt{5}-1)^{5/2}\sqrt{2}}{4\pi} = \frac{(3-\sqrt{5})\sqrt{2\sqrt{5}-2}}{2\pi} = \frac{\sqrt{10\sqrt{5}-22}}{\pi}$. These answers and other equivalents were accepted.

54a. 4045078385041

54b. 3927900252338210

55. $\frac{8\sqrt{3}}{9}$