THE PREP

St. Joseph's Preparatory School

HONORS PRECALCULUS

Summer Review Packet

IMPORTANT NOTICE:

This packet contains a review of material that you are expected to have mastered. You are to complete all practice problems prior to the start of the school year **on looseleaf paper**. Your teacher may choose to collect the problems for a grade. Or your teacher may choose to give you a test on the topics in this packet. Regardless of credit, however, this packet and these topics provide insight into material you will be expected to have learned and retained from previous math courses.

Simplify.

1. $\dfrac{2ab^3(3a^2b)^2}{6ab}$

2. $\left[-(-3mn^2)(10mn^3)^2\right] \div (5m^2n)^2$

3. $a^{3m} \cdot a^{4m-2}$

4. $(y^4)^{3-k}$

5. $\left(z^3\right)^{m+2} \div \left(z^2\right)^{1-3m}$

6. $(c^5 + 9)(3c^5 + 4)$

7. $(4 - 3k)(4 - 3k)$

8. $(5c^2 + 9d)^2$

9. $(5a - 7b)(a + 2b - 9)$

10. $(5 + k)(25 - 5k + k^2)$

11. $(20z^4 - 5z^3) \div (4z - 1)$

12. $\dfrac{36x^2a - 48xa^2 - 96x^2a^2}{-12xa}$

13. $(10x^2 + 23x - 5) \div (2x + 5)$

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Factor.

14. $8c^3 - 2c^2d$

15. $-63ab^2 + 18b^2 - 27b^3a$

16. $m^2 + 17m + 30$

17. $c^4 - 5c^2 + 6$

18. $350 + 65k - k^2$

19. $7m^2 + 19m - 6$

20. $10y^2 + 11y + 3$

21. $9q^2 + 52q - 77$

22. $7r^2 - 16rs - 15s^2$

23. $169 - r^2$

24. $-225 + 196c^2$

25. $k^2 - 22k + 121$

26. $121a^2 - 88ab + 16b^2$

27. $32a + 16a^2 + 2a^3$

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28. $32b^4 + 104b^3 + 60b^2$

29. $2304d - 9c^2d$

30. $25a^4 - (a-1)^2$

31. $7a - 7b + a^2 - ab$

32. $3c^2 - 2cp + 21pc - 14p^2$

33. $c^2 - 18cd + 81d^2 - 225x^2$

Solve.

34. $-\frac{d}{5} = -11$

35. $-\frac{1}{4}k = -1\frac{1}{8}$

36. $5 - 12s = -3$

37. $0.24k - (-3) = 0.6$

38. $-5.2 = 3m - 3.4m$

39. $-33 = -11k - 40 + (-9k) + 5 - (-6k)$

40. $3(a-4) - 3[(2+a) - 5] - 2(1-3a) = 13$

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41. $-12 + 5s + 5 = 2s - 5 - (-8s)$

42. $\frac{3}{4}(16r - 4) = \frac{1}{6}(-42 + 12r)$

43. $-\frac{2}{7}(7c + 14) + \frac{2}{3}(12c - 9) = 0$

44. $(a + 1)(2a - 1) - (a - 1)(2a + 1) = -18$

45. $-3 = (y - 2)(y - 3) + 4y - 7 - (y - 1)(y + 1)$

46. $\frac{1}{3} - \frac{5}{6} = \frac{1}{x}$

47. $\frac{6}{a} = \frac{2}{10 + a}$

48. $-4 = \frac{-x}{6} + \frac{2x}{15}$

49. $\frac{3}{4q} + \frac{1}{2q^2} = \frac{1}{8q}$

50. $\frac{b}{b - 1} - 1 + \frac{1}{2b + 7} = 0$

51. $\frac{4k^2}{k^2 - 4k + 4} - 4 = \frac{6}{k - 2}$

52. $\frac{7}{a^2 - 7a + 12} - \frac{1}{a^2 - a - 12} = \frac{6}{a^2 - 16}$

53. $\frac{12}{4w^2 - 12w + 9} = \frac{5}{4w^2 + 12w + 9} + \frac{7}{4w^2 - 9}$

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54. $|-9| = b - 3$

55. $|c| + 9 = 17$

56. $9 = |5 - 4p|$

57. $-|2m - 3| = 14$

58. $\left|\frac{2(c+1)}{7}\right| = 6$

59. $9 = 6 - 3|4p + 9|$

60. $|2 + 3t| = 6 + 5t$

61. $|10 + 2g| = |5 - 3g|$

62. $9 \geq -\frac{4}{7}a$

63. $15 \leq 7c - 13$

64. The sum of 4 consecutive integers is 334. Find the integers.

65. The product of a number and 6 less than the number is 27 less than the square of the number. Find the number.

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1.
Answer: $3a^4b^4$

2.
Answer: $\frac{12n^6}{m}$

3.
Answer: a^{7m-2}

4.
Answer: y^{12-4k}

5.
Answer: z^{9m+4}

6.
Answer: $3c^{10} + 31c^5 + 36$

7.
Answer: $16 - 24k + 9k^2$

8.
Answer: $25c^4 + 90c^2d + 81d^2$

9.
Answer: $5a^2 + 3ab - 45a - 14b^2 + 63b$

10.
Answer: $125 + k^3$

11.
Answer: $5z^3$

12.
Answer: $-3x + 4a + 8xa$

13.
Answer: $5x - 1$

14.
Answer: $2c^2(4c - d)$

15.
Answer: $-9b^2(7a - 2 + 3ba)$

16.
Answer: $(m + 2)(m + 15)$

17.
Answer: $(c^2 - 2)(c^2 - 3)$

18.
Answer: $(70 - k)(5 + k)$

19.
Answer: $(7m - 2)(m + 3)$

20.
Answer: $(5y + 3)(2y + 1)$

21.
Answer: $(9q - 11)(q + 7)$

22.
Answer: $(7r + 5s)(r - 3s)$

23.
Answer: $(13 - r)(13 + r)$

24.
Answer: $(14c - 15)(14c + 15)$

25.
Answer: $(k - 11)^2$

26.
Answer: $(11a - 4b)^2$

27.
Answer: $2a(4 + a)^2$

28.
Answer: $4b^2(2b + 5)(4b + 3)$

29.
Answer: $9d(16 - c)(16 + c)$

30.
Answer: $(5a^2 - a + 1)(5a^2 + a - 1)$

31.
Answer: $(a - b)(7 + a)$

32.
Answer: $(c + 7p)(3c - 2p)$

33.
Answer: $(c - 9d - 15x)(c - 9d + 15x)$

34.
Answer: 55

35.
Answer: $\frac{9}{2}$

36.
Answer: $\frac{2}{3}$

37.
Answer: -10

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38.
Answer: 13

39.
Answer: $-\frac{1}{7}$

40.
Answer: 3

41.
Answer: $-\frac{2}{5}$

42.
Answer: $-\frac{2}{3}$

43.
Answer: $\frac{5}{3}$

44.
Answer: -9

45.
Answer: 3

46.
Answer: -2

47.
Answer: -15

48.
Answer: 120

49.
Answer: $\frac{-4}{5}$

50.
Answer: -2

51.
Answer: $\frac{2}{5}$

52.
Answer: $\frac{-25}{8}$

53.
Answer: $\frac{-21}{34}$

54.
Answer: 12

55.
Answer: ± 8

56.
Answer: $-1,\ \frac{7}{2}$

57.
Answer: Ø

58.
Answer: 20, -22

59.
Answer: Ø

60.
Answer: -1

61.
Answer: $-1,\ 15$

62.
Answer: $a \geq \frac{-63}{4}$

63.
Answer: $c \geq 4$

64.
Answer: 82, 83, 84, 85

65.
Answer: $\frac{9}{2}$

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