Honors Pre-Calculus **Final Exam Review Packet Answer Key**

1. $\frac{7\pi}{6}, \frac{11\pi}{6}$ **2.** $\frac{\pi}{4}, \frac{3\pi}{4}$ **3.** $\frac{3\pi}{4}, \frac{7\pi}{4}$ **4.** undefined

5. $270° \pm 360°n$ **6.** $150° \pm 360°n$ $210° \pm 360°n$ **7.** $90° \pm 180°n$ **8.** $\frac{\pi}{3}, 60°$

9. $\sqrt{3}$ **10.** $-\frac{5}{3}$ **11a.** $\frac{1}{3}$ **11b.** 4π

12a. 2 **12b.** $\frac{2\pi}{3}$ **12c.** $\frac{\pi}{2}$ **12d.** -4

13. $\cos^2\theta$ **14.** answers will vary **15.** $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{3\pi}{2}$ **16.** $\frac{\pi}{4}, \frac{7\pi}{4}$

17. $\angle B = 60°;\ b = 6\sqrt{3};\ c = 12$ **18.** $60°$ **19.** 342901.6 ft.

20. $104.5°$ **21.** 1.782 miles **22.** 25 **23.** 26.4

24. 27.1 **25.** $\angle C = 39°;\ \angle B = 109°;\ b = 27.0$ or $\angle C = 141°;\ \angle B = 7°;\ b = 3.5$

26. 410.86 **27.** $36.9°$ or $143.1°$ **28.** 534.97 **29.** $69.5°, 69.5°, 41°$

30. 549.5 m **31.** 28.7 **32.** 739.93 miles **33a.** $\frac{\sqrt{6}-\sqrt{2}}{4}$

33b. $\frac{\sqrt{6}+\sqrt{2}}{4}$ **34a.** $\cos 90° = 0$ **34b.** $\cos x$ **35a.** $\frac{12}{13}$

35b. $-\frac{119}{169}$ **35c.** $\frac{120}{169}$ **36a.** $\cot x$ **36b.** $2\cot^2 x$

36c. $\frac{\sin x}{1-\cos x}$ **37.** $-\frac{\sqrt{3}}{2}$ **38.** answers will vary **39a.** $\frac{\pi}{2}$

39b. $\pi, \frac{2\pi}{3}, \frac{4\pi}{3}$ **39c.** $0\pi,\ \pi,\ 1.11,\ 4.25$ **40a.** $(0,6)$ **40b.** $\left(\sqrt{3},1\right)$

41a. $\left(3\sqrt{2}, \frac{\pi}{4}\right)$ **41b.** $\left(2, \frac{4\pi}{3}\right)$ **41c.** $\left(2, \frac{3\pi}{2}\right)$

42. $z_1 = 2\,cis\frac{11\pi}{6};\ z_2 = 4\sqrt{2}\,cis\frac{\pi}{4};\ z_1 z_2 = 8\sqrt{2}\,cis\frac{\pi}{12}$ **43a.** $64i$ **43b.** $-512\sqrt{3} + 512i$

43c. $\frac{1}{32} - \frac{\sqrt{3}}{32}i$ **44.** $\sqrt[3]{2}\cdot cis10°, \sqrt[3]{2}\cdot cis130°, \sqrt[3]{2}\cdot cis250°$ **45a.** arith.; $a_n = -5n + 22$

45b. neither; $a_n = n^2 + 2n$ **45c**. geometric; $a_n = -81\left(-\frac{1}{3}\right)^{n-1}$ **46a**. 51

46b. 459 **47**. $\frac{4}{2187}$ **48**. 212 **49**. 2340

50a. converge **50b**. $\frac{3}{4}$ **51**. $\frac{1640}{2187}$

52. $-\frac{3}{2} < x < \frac{3}{2}; \frac{3}{3-2x}$ **53**. $\sum_{i=1}^{8}(-3n+11)$ **54a**. 1, 4, 9, 16, 25, 36 **54b**. $a_n = n^2$

55a. 65 **55b**. 5320 **56**. $\sum_{i=1}^{25}(4n+1)$ **57a**. $2 < x < 4$

57b. $-\frac{1}{3} < x < \frac{1}{3}$ **58a**. $\sum_{i=1}^{\infty}\left(\frac{1}{3}\right)^{n-1}$ **58b**. $\frac{3}{2}$ **59**. $a_1 = 6$, $a_n = a_{n-1} + 4$

60. $-\frac{1}{3}$ **61**. omit!! **62**. 3 **63**. $-\frac{1}{4}$

64. 0 **65**. $-\infty$ **66**. does not exist (oscillates) **67**. ∞

68. 5 **69**. 2 **70**. does not exist (oscillates) **71**. does not exist

72. $\frac{\sqrt{3}}{6}$ **73**. $\frac{3}{5}$ **74**. $\frac{1}{2}$ **75**. 5

76. does not exist…domain! **77**. 12 **78**. $-20x^{-6} - 6x^{-4} - 9x^{-2}$

79. $-\frac{6}{(3x+1)^3}$ **80**. $-\frac{12}{x^3}$ **81**. $\frac{(x-1)\sqrt{x}}{2x^2}$ **82**. $15x^4 - 18x^2$

83. $\frac{4}{(x+2)^2}$ **84**. $(12x-8)(3x^2-4x+1)$ **85**. $\frac{3(x^2-6x+15)}{(x-3)^2}$ **86**. $7(3x)^{\frac{4}{3}}$

87. -6 **88**. 2x – 3 **89**. 6x + 4 **90**. 4; $y = 4x - 5$

91. 11; $y = 11x - 16$ **92**. $\frac{1}{4}$; $y = \frac{1}{4}x + \frac{5}{4}$ **93**. 1; $y = x + 4$ **94**. $y = -4x + 6$

95. $f(x) = x^3 + 2x^2 + 3x + c$

96. Local Max=(-1,32)
Local Min= (3,0)
Point of inflection=(1,16)
Concave Up: (1,∞)
Concave Down: (-∞,1)

97a. 32 **97b**. 2 sec. **97c**. 144 ft

97d. 5 sec. **97e**. $2 < t < 5$

98. $26{,}666\frac{2}{3}$ yds^2

99. 7 inches x 14 inches **100**. 4 x 4 x 2