# Pre-Calc Name Date Block

**Directions:** The following problems represent some of the most important skills you’ve learned from Algebra 2. You must be able to complete these types of problems going forward in order to succeed in Pre-Calculus. If at any time you feel like you need extra help, please make sure you ask. Show **ALL** of your work.

**A. Linear Equations**

**I. Find the slope and the x and y-intercepts of each line. Graph each function.**

1. y = 2x + 8 2. 5x + 10y = -20 3. 12 - x = 2y

**II. Find the slope of each line.**

4. Find the slope of the line that contains the points (5,3) and (-7,-1).

5. Find the slope of a line that is parallel to a line whose equation is y = x +1.

6. Find the slope of a line that is perpendicular to a line that contains the points (-3,1) and (7,4).

**III. Write the equation of the line (in slope-intercept form) described in each problem.**

7. Write the equation of the line that passes through (6,1) and (8,-4).

8. Write the equation of the line that passes through (-2,0) and is perpendicular to the line whose equation is y = -3x + 7.

**B. Radicals**

**I. Simplify each expression.**

9.  10.  11. 

12.  13.  14. 

**II. Use your calculators to evaluate the following radicals. Round to the nearest hundredth.**

15.  16.  17. 

**C. Quadratic Equations**

**I. Factor each polynomial completely.**

18.  19. 

20.  21. 

22.  23. 

24.  25. 

26.  27. 

**II. Find the roots of the following functions (Remember, roots are x-intercepts).**

28. y = 7x + 49 29. y = x3 – x2 – 4x + 4

30. y = x – 5x2 31. y = 4x – 28x2

32. y = x2 + 10x + 21 33. y = 3x2 – 2x – 8

34. y = x2 – 64 35. y = x4 – 256

**III. Simplify each expression.**

36.  37.  38. 

39. i3 3i3 40. 4i3 5i100 41. 

42.  43. 5i (3i3)4 44. (-3 – 10i) – (-5 – 4i)

45. 4(7 – i) – 5(2 – 6i) 46. (10 – 2i)(3 + 4i) 47. 

**D. Exponents**

**Simplify each expression.**

48.  49.  50. 

51.  52.  53. 

54. $(x-3)^{2}$ 55. $(3x+7)^{2}(4x+1)$ 56. $\frac{x^{2}-9}{x^{2}-6x+9}$

E. Graphing

**Graph the following equations on a separate sheet of paper.**

57. $y=x^{2}-9$ 58. $y=-\left|x+3\right|+1$ 59. $y=-3(x-2)^{2}$

60. $y=\left\{\begin{array}{c}2x-1, x<0\\3x+3, x\geq 0\end{array}\right.$ 61. $y=2(x+1)^{3}-4$ 62. $y=x^{2}-6x+9$

**F. Trigonometry**

**Solve for the missing pieces of each triangle using Pythagorean Theorem, 30°-60°-90°, 45°-45°-90°, or trigonometry.**

63. 64. 20° 65.

 5 x

30 x x 10

45°

12

66. 67. 68.

 x 15 6 4 4$\sqrt{2}$

 30° x°

 9 x

69. If tan$ θ=\frac{3}{4}$ what would cos θ be equal to?

70. If sin θ = $\frac{12}{13}$ what would tan θ be equal to?