

## PRECALCULUS

This review packet is intended as a sample of the problems covered in your previous mathematics courses. Students should be able to work all problems on this worksheet before taking a precalculus class. This assignment is due on the first full day of class – **no exceptions**.

### Solve the absolute value equations.

1)  $|2x - 1| = 3$

2)  $|2 - y| = -1$

3)  $|2x - 3| - 8 = -2$

4)  $|x + 5| = |2x + 1|$

### Solve the absolute value inequalities and give the solution in interval notation.

5)  $|2x - 3| + 6 < 5$

6)  $|4x - 3| + 2 < 13$

7)  $|5x - 1| \geq 4$

8)  $|3y - 2| > 11$

### Find the slope, the y intercept, and sketch the graph

9)  $-3x + 2y = 6$

10)  $2x - y = 4$

11)  $y = \frac{1}{3}x$

### Solve the problems by finding the slopes.

12) Find the slope of a line through (6, 5) and (-3, 2).

13) Find the slope of a line that is parallel to a line through (-4, 1) and (2, 5).

14) Are the following lines parallel or perpendicular? Explain your answer.

$$3x - y = 5 \quad \text{and} \quad x + 3y = 6$$

### Find the equation of a line in slope-intercept form satisfying the following conditions.

15) Passing through (-2, -5) with slope 3.

16) Passing through (3, 6) and (1, 1).

17) Parallel to  $2x + 5y = 10$  and passing through (-5, 3).

18) Perpendicular to  $y = \frac{2}{3}x + 1$  and passing through (4, -1).

### Graph the solution sets for the following.

19)  $5x - 3y < 15$

20)  $y \geq -2x + 6$

**For each of the following functions, give the domain and the range.**

21)  $\{(3, -1), (-5, 0), (2, 7)\}$

22)  $y = x^2 - 2$

23)  $y = |x + 4|$

**Let  $f(x) = 2x^2 - 5x - 3$  and  $g(x) = 3x + 1$ . Evaluate the following:**

24)  $f(2)$

25)  $g(-3)$

26)  $g[f(2)]$

27)  $f[g(-1)]$

28)  $f[f(1)]$

**Perform the indicated operations. Rationalize the denominators.**

29)  $(\frac{27}{64})^{-2/3}$

**Simplify. Put in standard form  $(a + bi)$ .**

30)  $(16 + 3i) - (-4 + 10i)$

31)  $(2 - 3i)^2$

32)  $\frac{3}{5 - 2i}$

33)  $\frac{3 - i}{2 + i}$

34)  $(3 - i)(2 + 5i)$

**Solve each equation by completing the square.**

35)  $2x^2 + 4x = 10$

36)  $x^2 - 6x + 10 = 0$

37)  $y^2 + 3y - 2 = 0$

**Solve each equation by using the quadratic formula.**

38)  $2x^2 - 4x + 3 = 0$

39)  $\frac{1}{2}y^2 + 3y - 1 = 0$

40)  $5x^2 - 4x = -1$

**Find the equation that has the given solutions.**

41)  $x = -2, x = 7$

42)  $x = \frac{2}{3}, x = -5$

**Solve each equation.**

43)  $x^4 - 2x^2 - 8 = 0$

44)  $(x - 3)^2 - 4(x - 3) = 12$

45)  $x + \sqrt{x} = 20$

**Find the vertex and the x and y intercepts. Sketch and label the graph.**

46)  $y = x^2 + 2x - 3$

47)  $y = 2x^2 - 8$

48)  $y = -x^2 - 4x + 5$