

Pre-Calculus  
Chapter 1 Review **KEY** (Show your work!)

1. Let  $A = \left(\frac{1}{2}, \frac{9}{2}\right)$  and  $B = \left(-2, -\frac{3}{2}\right)$ .

(a) Find the length of  $\overline{AB}$ .

**13/2**

(b) Find the coordinates of the midpoint of  $\overline{AB}$ .

**(-3/4, 3/2)**

2. Find the value of  $a$  if the line joining  $(2, a)$  and  $(4, 5)$  and the line  $-3x + y = 1$  are:

a. parallel

**$a = -1$**

b. perpendicular

**$a = 17/3$**

3. Solve the equations  $x - 3y = 4$  and  $5x + y = -8$  simultaneously.

**(-5/4, -7/4)**

4. Find the intercepts of the line  $3x + 2y = 18$ .

**x-int: (6,0)      y-int: (0,9)**

5. Tell which of the following equations have parallel line graphs and which have perpendicular line graphs.

I.  $3y = 5x - 5$

II.  $y = -\frac{3}{5}x + 4$

III.  $10y = -6x - 7$

**I  $\perp$  II, I  $\perp$  III, II  $\parallel$  III**

6. Let  $f$  be a linear function such that  $f(-1) = -3$  and  $f(-4) = 12$ . Find an equation in general form for  $f(x)$ .

**$5x + y = -8$**

## Pre-Calculus

7. Simplify  $\frac{5-2i}{4+3i}$

$$\frac{14-23i}{25}$$

3

8. Simplify  $(\sqrt{2}+i)(\sqrt{2}-i)$

9. Simplify  $i^{-6}$

$$-1$$

10. Solve  $(2x-1)^2 = -4$

$$x = \frac{1 \pm 2i}{2}$$

11. Solve  $y^2 - 8y = 2$

$$y = 4 \pm 3\sqrt{2}$$

12. Find the vertex, axis of symmetry, and intercepts of the quadratic function  $y = \frac{1}{2}x^2 + 4x + 8$

$$\text{vertex: } (-4, 0); \text{ AOS: } x = -4, \text{ x-int: } (-4, 0), \text{ y-int: } (0, 8)$$

13. Given the equation of a line and parabola, determine the point(s) of intersection.

$$y + x = -6, y = x^2 + 6x$$

$$(-1, -5) \text{ and } (-6, 0)$$

14. Write the equation of a parabola with x-intercepts 2 and -1 and y intercept of 6.

$$y = -3x^2 + 3x + 6$$

15. Use the given values to write an equation in the form  $y = ax^2 + bx + c$  by hand.  
(-2, 4) (-1, 0) and (1, -2)

$$y = x^2 - x - 2$$