

## Linear Functions

1)  $A(1,2) B(2,1)$   
 $m = 3$

2)  $A(-2,-1) (1,-2)$   
 $m = -\frac{1}{3}$

3)  $A(1,2) B(1,-3)$   
 $m = \phi$

4)  $P(3,2)$   
 a)  $x=3$   
 b)  $y=2$

5)  $P(0,-\sqrt{2})$   
 a)  $x=0$   
 b)  $y=-\sqrt{2}$

6)  $P(-\pi, \frac{\pi}{4})$   
 a)  $x=-\pi$   
 b)  $y=\frac{\pi}{4}$

7)  $P(1,2), m=1$   
 $y-2=1(x-1)$

8)  $P(-4,0), m=-2$   
 $y-0=-2(x+4)$

9)  $P(-\pi, \pi) m=\frac{\sqrt{2}}{2}$   
 $y-\pi=\frac{\sqrt{2}}{2}(x+\pi)$

10)  $(0,0) (2,3)$   
 $m=\frac{3}{2}$   
 $y-0=\frac{3}{2}(x-0)$   
 or  
 $y-3=\frac{3}{2}(x-2)$

11)  $(\frac{1}{2}, \frac{7}{4}) (0, \frac{3}{4})$   
 $m=\frac{\frac{14}{4}-\frac{3}{4}}{\frac{2}{4}}=\frac{11}{2}$   
 $y-\frac{7}{4}=\frac{11}{2}(x-\frac{1}{2})$   
 or  
 $y-\frac{3}{4}=\frac{11}{2}(x-0)$

12)  $(1,-2) (3,-2)$   
 $m=0$   
 $y+2=0(x-1)$   
 or  
 $y+2=0(x-1)$  }  $y=-2$

13)  $3x+4y=12$   
 a)  $m=-\frac{3}{4}$   
 b)  $(4,0)$   
 c)  $(0,3)$

14)  $\frac{x}{3}+\frac{y}{4}=1$   
 $4x+3y=12$   
 a)  $m=-\frac{4}{3}$   
 b)  $(3,0)$   
 c)  $(0,4)$

15)  $x=4$   
 a)  $m=\phi$   
 b)  $x=4$   
 c) None

16)  $P(-2,2) L: 2x+y=4$   
 $y=-2x+4$

a)  $y-2=-2(x+2)$

b)  $y-2=\frac{1}{2}(x+2)$

17)  $P(-6,4) L: 3x+4y=7$   
 $y=-\frac{3}{4}x-\frac{7}{4}$

a)  $y-4=-\frac{3}{4}(x+6)$

b)  $y-4=\frac{4}{3}(x+6)$

18)  $P(-1, \frac{1}{2}) L: y=3$

a)  $y=\frac{1}{2}$

b)  $x=-1$

$$19) m = \frac{7}{2}$$

$$y - 2 = \frac{7}{2}(x - 1)$$

$$f(x) = 2 + \frac{7}{2}(x - 1)$$

$$f(10) = 2 + \frac{7}{2}(9)$$

$$f(10) = \frac{67}{2}$$

$$20) m = -\frac{3}{2}$$

$$y + 1 = -\frac{3}{2}(x - 2)$$

$$f(x) = -1 - \frac{3}{2}(x - 2)$$

$$f(10) = -1 - \frac{3}{2}(8)$$

$$f(10) = -13$$

$$21) A(-2, 3) B(4, y) m = -\frac{2}{3}$$

$$m = \frac{y - 3}{6} = -\frac{2}{3}$$

$$3y - 9 = -12$$

$$3y = -3$$

$$\boxed{y = -1}$$

$$22) A(-8, -2) B(x, 2) m = 2$$

$$m = \frac{2 + 2}{x + 8} = 2$$

$$4 = 2x + 16$$

$$\boxed{x = -6}$$

$$23) 2x + ky = 3 \quad x + y = 1$$

$$y = -x + 1 \rightarrow m = -1$$

a) parallel

$$ky = -2x + 3$$

$$y = -\frac{2}{k}x + \frac{3}{k}$$

$$m = -\frac{2}{k} \rightarrow -\frac{2}{k} = -1$$

$$\boxed{k = 2}$$

b)  $\perp$

$$m = \frac{k}{2} = -1$$

$$\boxed{k = -2}$$