

# Algebra II

## 3-3

### Finding Equations of Lines

slope/intercept form  
Find an equation in ~~standard form~~ of the line containing point  $P$  (pg 121) and having slope  $m$ .

1)  $P(2,3)$ ,  $m = 1$

$$y = mx + b$$

$$y = 1x + b$$

Use P

$$\begin{aligned} 3 &= 1(2) + b \\ 3 &= 2 + b \\ 1 &= b \end{aligned}$$

$$y = x + 1$$

Write in Slope /Intercept form.

13)  $m = -1$ ;  $b = 2$

$$y = mx + b$$

$$y = -x + 2$$

Write in Slope /Intercept form.

19)  $(0,0)$ ,  $(5,-2)$

$$y = mx + b$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 0}{5 - 0} = -\frac{2}{5}$$

$$y = -\frac{2}{5}x + b$$

$$0 = -\frac{2}{5}(0) + b$$

$$0 = b$$

Use a

$$y = -\frac{2}{5}x$$



### Algebraic Definitions

Parallel - Two lines with the same slope.  
||

Perpendicular - Two lines with opposite reciprocal slope  
⊥

Find the equation of the lines through point  $P$  that are parallel and perpendicular to the given line  $L$ .

35)  $P(2,0)$   $L: x+2y=3$

$$x+2y=3$$

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

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

we only need

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

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

$$y = mx + b$$

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

pass

$$\begin{cases} 0 = -\frac{1}{2}(2) + b \\ 0 = -1 + b \\ 1 = b \end{cases}$$

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

⊥  $m = \frac{2}{1}$

$$y = mx + b$$

$$y = 2x + b$$

$$\begin{cases} 0 = 2(2) + b \\ -4 = b \end{cases}$$

$$y = 2x - 4$$

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