



## QT Parallel lines

1. Write down the equation of a line parallel to  $y = 4x + 4$

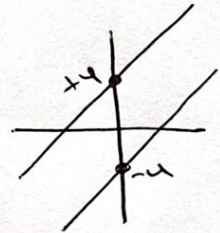
$$y = 4x + 8$$

← same gradient

2. Write down the equation of a line parallel to  $y = 4x + 4$  which passes through  $(0, -4)$

$$y = mx + c$$

$$y = \underline{\underline{4x - 4}}$$



3. Find the equation of a line parallel to  $4y - 2x + 6 = 0$

$$4y = 2x - 6$$

$$y = \frac{2x - 6}{4} = \frac{2x}{4} - \frac{6}{4}$$

∴ Parallel  
 $y = \underline{\underline{\frac{1}{2}x + 3}}$

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

4. Find the equation of a line parallel to  $4y - 2x + 6 = 0$  which passes through  $(0, 3)$

$$y = mx + c$$

$$4y = 2x - 6$$

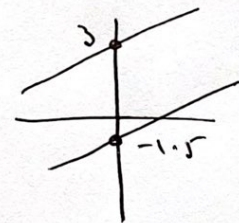
$$y = \frac{2x - 6}{4} = \frac{2x}{4} - \frac{6}{4}$$

∴  $y = \frac{1}{2}x + 3$

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

$y = \underline{\underline{0.5x + 3}}$

$$y = 0.5x - 1.5$$



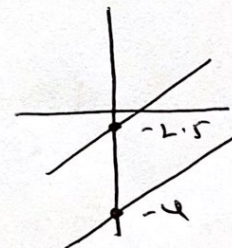
5. Find the equation of a line parallel to  $2y - 3x + 5 = 0$  which passes through  $(0, -4)$

$$2y = 3x - 5$$

$$y = \frac{3x - 5}{2} = \frac{3x}{2} - \frac{5}{2}$$

$$y = 1.5x - 2.5$$

∴  $y = \underline{\underline{1.5x - 4}}$







6. Line A passes through the points (4,3) and (8,6). Find the equation of the line parallel to line A that passes through (8,12)

$y = mx + c$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{6 - 3}{8 - 4} = \frac{3}{4}$$
$$y = \frac{3}{4}x + c$$

when (8,12)

$$12 = \frac{3}{4}(8) + c$$
$$12 = 6 + c$$
$$6 = c$$
$$\therefore y = \frac{3}{4}x + 6$$

7. Line A passes through the points (1,2) and (4,6)  
Line B passes through the points (4,7) and (6, 11)  
Determine whether Line A and line B are parallel.

$$\text{Line A} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6 - 2}{4 - 1} = \frac{4}{3} = 1\frac{1}{3}$$
$$\text{Line B} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{11 - 7}{6 - 4} = \frac{4}{2} = 2$$

Not parallel

8. Line A passes through the points ~~(1,2)~~<sup>1,1</sup> and ~~(4,6)~~<sup>4,7</sup>  
Line B passes through the points (4,7) and (k, 14)  
Line A and B are parallel.  
Find the value of k.

$$\text{Line A} \quad \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - 1}{4 - 1} = \frac{6}{3} = 2$$
$$\text{Line B} \quad \frac{y_2 - y_1}{x_2 - x_1} = 2$$
$$\frac{14 - 7}{k - 4} = 2$$
$$7 = 2(k - 4)$$
$$7 = 2k - 8$$
$$15 = 2k$$
$$\underline{\underline{7.5 = k}}$$