Finding the Equations of Lines

The default way of writing the equation of a line is

$$y = mx + c.$$

Remember also that the gradient between two points is given by

$$\text{grad} = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}.$$

Also remember that given a point that a line goes through (x_1, y_1) and its gradient, the line's equation is

$$y - y_1 = m(x - x_1).$$

Find the equations of the following lines in the form $y = mx + c$

1. Line with gradient 4, passing through the point $(2, -5)$.

    $y = 4x - 13$

2. The line that passes through $(1, 1)$ and $(4, 7)$.

    $y = 2x - 1$

3. Line with gradient -1, passing through the point $(3, 2)$.

    $y = -x + 5$

4. The line that passes through $(2, -3)$ and $(0, 1)$.

    $y = -2x + 1$

5. Line with gradient $\frac{1}{2}$, passing through the point $(10, 3)$.

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

6. The line that passes through $(0, 1)$ and $(6, 4)$.

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

7. Line with gradient $-\frac{1}{3}$, passing through the point $(1, -4)$.

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

8. The line that passes through $(-3, 0)$ and $(1, -1)$.

    $y = -\frac{1}{4}x - \frac{3}{4}$

9. Line with gradient $\frac{2}{3}$, passing through the point $(0, 0)$.

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

10. The line that passes through $(-3, 2)$ and $(4, -1)$.

    $y = -\frac{3}{7}x + \frac{5}{7}$

11. Line with gradient $-\frac{5}{2}$, passing through the point $(-3, 0)$.

    $y = -\frac{5}{2}x - \frac{15}{2}$

12. The line that passes through $(\frac{1}{2}, \frac{3}{2})$ and $(4, -1)$.

    $y = -\frac{5}{7}x + \frac{13}{7}$

13. Line with gradient $\frac{7}{8}$, passing through the point $(-\frac{1}{2}, \frac{5}{3})$.

    $y = \frac{7}{8}x + \frac{101}{48}$

14. The line that passes through $(-\frac{2}{3}, \frac{7}{3})$ and $(\frac{4}{5}, 1)$.

    $y = -\frac{10}{11}x + \frac{19}{11}$