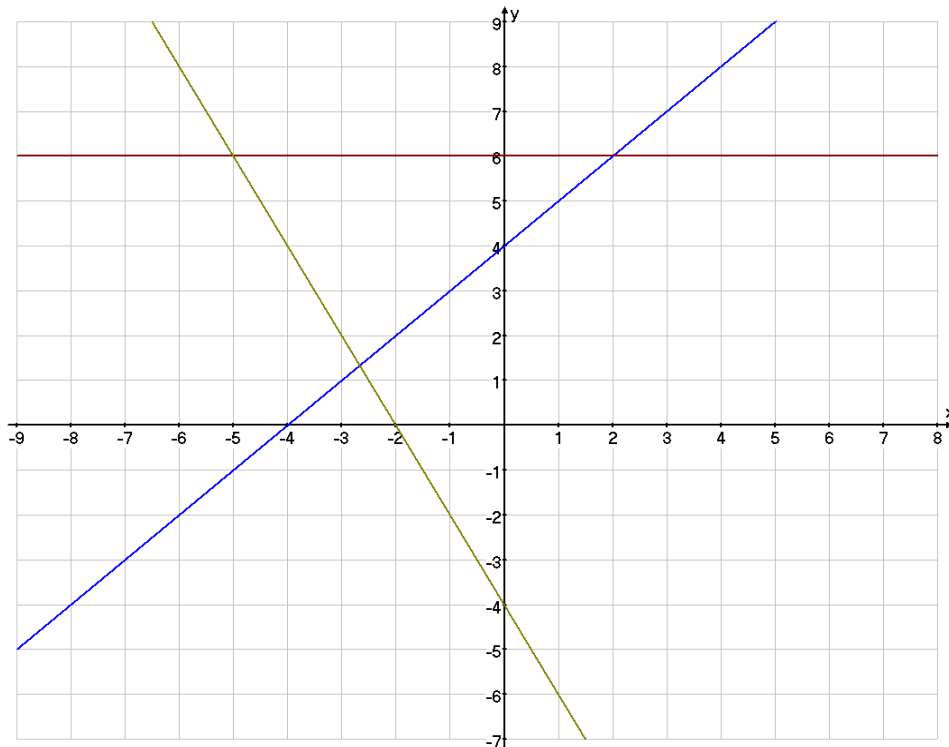# Grade 9 Mathematics Worksheet

Linear functions and area

Questions:

1.

Above you have three linear functions given to you. The drawings are accurate drawings.

a)   Find the equations of the three graphs

b)   Show how you can find the points where they intersect one another algebraically

c)   Find the area of the triangle that is enclosed by the three graphs

Solution:

1. a) $A: y = 6$; $B: y = x + 4$; $C: y = -2x - 4$

    b) $A: y = 6$; $B: y = x + 4$; $C: y = -2x - 4$

    $A \text{ and } B: x + 4 = 6 \rightarrow x = 2 \quad (2;6)$

    $A \text{ and } C: -2x - 4 = 6 \rightarrow -2x = 10 \rightarrow x = -5 \quad (-5;6)$

    $B \text{ and } C: -2x - 4 = x + 4 \rightarrow -3x = 8 \rightarrow x = -\frac{8}{3}$

    $\text{So } y = -\frac{8}{3} + 4 = \frac{-8+12}{3} = \frac{4}{3} \quad \left(-\frac{8}{3}; \frac{4}{3}\right)$

    c)   Area = $\frac{1}{2} \times base \times height = \frac{1}{2}\left(2 - (-5)\right)\left(6 - \frac{4}{3}\right) = \frac{1}{2}(7)\left(\frac{14}{3}\right) = \frac{49}{3} u^2$