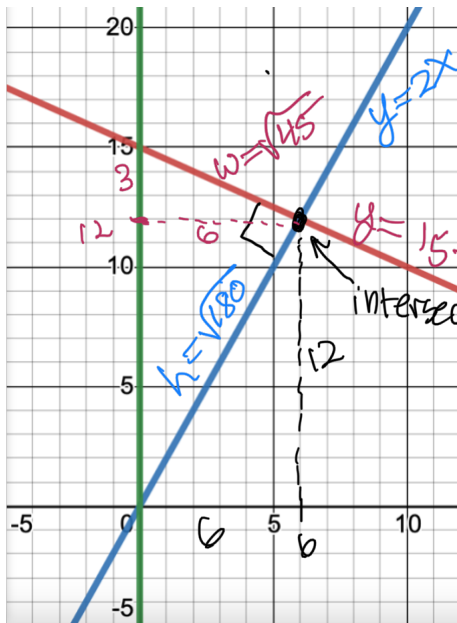**Module 9 – Homework 1 – Question 1**

Find the area of a triangle bounded by the y-axis, the line given by the function, $f(x) = 15 - 0.5x$, and the line perpendicular to $f(x)$ and passing through the origin.

Line perpendicular to $f(x) = 15 - \frac{1}{2}x$ has slope $m = 2$ and passes through $(0,0)$. So $b = 0$.

$y = 2x$

Intersection $2x = 15 - 0.5x$

$2.5x = 15$

$x = \frac{15}{2.5} \rightarrow x = 6$

$y = 2(6) \rightarrow y = 12$

Intersection $(6, 12)$

$h^2 = 6^2 + 12^2$

$h^2 = 180 \rightarrow h = \sqrt{180}$

$w^2 = 3^2 + 6^2$

$w^2 = 45 \rightarrow w = \sqrt{45}$

$Area = \frac{1}{2} w \ast h$

$Area = \frac{1}{2} \sqrt{45} \ast \sqrt{180}$

$Area = 45$ square units