



**Take a look at a LiveMath notebook.
Don't do anything.....Just look.**



A function $g(x)$:

$g(x) = (1 - x)(x - 4)$



Define another function as the integral of $g(x)$ from $a = 3$:

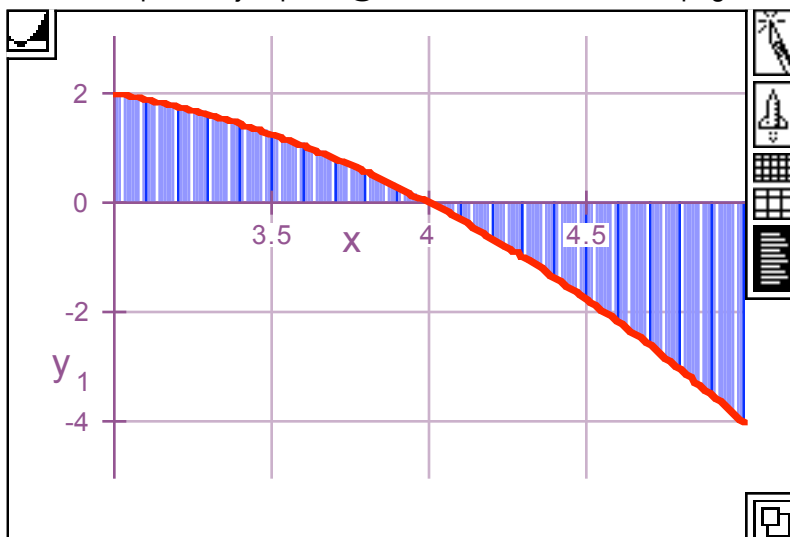
$a = 3$

$f(x) = \int_a^x g(x) dx$



Here is a graph of $g(x)$ and the area between it and the x -axis. This area is measured by $f(x)$:

$y_1 = g(x)$



3 ... 5 = left...right

Stretch to Fit ▼

5 ... 3 = bottom...top cropping

Moderately ▼

Graph Building Blocks

Shading

shadenummer = 200

Grid lines at (x, y) where $y = 0 \dots g(x)$

for each value $x = \text{left} \dots \text{right}$ separated by

$\frac{\text{right} - \text{left}}{\text{shadenummer}}$ colored **Blue** ▼.

Curve at (x, y_1) where $x = \text{left} \dots \text{right}$

with a **heavy** ▼ line, colored **Red** ▼.

From the graph it appears the function $g(x)$ crosses the x-axis around $x = 4$. The shaded area between $x = 3$ and $x = 4$ is all above the x-axis and sort of makes a triangle-like shape with base of length 1 and height 2. This would give such a triangle area:

$\frac{1}{2} \cdot 1 \cdot 2$

$\frac{1}{2} \cdot 1 \cdot 2 = 1$ Calculate

Therefore since $f(x)$ is measuring this area, $f(4)$ should be a value around 1:

$f(4)$

$f(4) = 1.1667$ Calculate

Pretty close.