4.1 Area under a curve

Placing the cursor on the line of interest; hit the left mouse button; press enter. This will execute that line of Maple code. The Maple code all appears in red. The results are blue. Instructions to Maple end with a semicolon or a colon. Those ending with a colon suppress the display of results.

```maple
> factor(sum(i,i=1..n));
> factor(sum(i^2,i=1..n));
> factor(sum(i^3,i=1..n));
> factor(sum(i^4,i=1..n));
```

The `with` command loads a Maple package with supplementary code required for what follows. It must be executed for the later code to work.

```maple
> with(Student[Calculus1]):
```

The command below generates an animation. Execute it in the usual way, then click on the graph. Press the play button that appears on the menu bar.

```maple
> ApproximateInt(3*x^2+2*x+1, 0..1, output=animation, partition=4, refinement=halve, subpartition=width, method=left,iterations=253, showpoints=false);
```
An Approximation of the Integral of

\[ f(x) = 3x^2 + 2x + 1 \]

on the Interval [0, 1]

Using a Left-endpoint Riemann Sum

Area: 2.406250000
An Approximation of the Integral of 
\[ f(x) = 3x^2 + 2x + 1 \]
on the Interval \([0, 1]\)

Using a Right-endpoint Riemann Sum

Area: 3.656250000

Partitions: 4