

Keys	Comments	Keys	Comments
<b>LBL</b>	Execution begins here.	<b>LBL</b>	Execution begins here.
<b>A</b>		<b>B</b>	
<b>f</b>	Calculates sin x.	<b>f</b>	Calculates cos x.
<b>SIN</b>		<b>COS</b>	
<b>ENTER</b> ↑	Saves copy for numerator.	<b>ENTER</b> ↑	Saves copy for numerator.
<b>ENTER</b> ↑		<b>ENTER</b> ↑	
<b>x</b>	(sin x) <sup>2</sup>	<b>x</b>	(cos x) <sup>2</sup>
<b>3</b>	3(sin x) <sup>2</sup>	<b>3</b>	3(cos x) <sup>2</sup>
<b>x</b>		<b>x</b>	
<b>2</b>	3(sin x) <sup>2</sup> + 2	<b>2</b>	3(cos x) <sup>2</sup> + 2
<b>+</b>		<b>+</b>	
<b>÷</b>	The answer.	<b>÷</b>	The answer.

**RTN**

As you can see, the last nine steps of each program are the same. What we can do is write a program containing these nine steps and branch our **LBL A** and **LBL B** programs to it. This third program will be controlled by the **C** key and will calculate  $\frac{a}{3a^2 + 2}$ . For one program, "a" will equal sin x, while for the other, "a" will equal cos x. Switch to W/PRGM mode, press **f** **PRGM**, and key in this program now.

Keys	Comments	Keys	Comments
<b>LBL</b>	Beginning.	<b>3</b>	3a <sup>2</sup>
<b>C</b>		<b>x</b>	
<b>ENTER</b> ↑	Save copy of a.	<b>2</b>	3a <sup>2</sup> + 2
<b>ENTER</b> ↑		<b>+</b>	
<b>x</b>	a <sup>2</sup>	<b>÷</b>	The answer.
		<b>RTN</b>	End.

Now key in the **A** and **B** programs which have been shortened to this:

Keys	Comments	Keys	Comments
<b>LBL</b>	Beginning.	<b>LBL</b>	Beginning.
<b>A</b>		<b>B</b>	
<b>f</b>	Calculates sin x.	<b>f</b>	Calculates cos x.
<b>SIN</b>		<b>COS</b>	
<b>GTO</b>	Then branches to label C.	<b>GTO</b>	Then branches to label C.
<b>C</b>		<b>C</b>	

Notice immediately that these last two programs did not end in **RTN** because they branch directly to **LBL C** and continue execution there. Also notice that in entering these three programs you keyed in the **C** program first, then the **A** program, and finally the **B** program. The order of entry or use is immaterial. Now switch to RUN mode and let's run the programs.

**Example.** Calculate  $\frac{\sin x}{3(\sin x)^2 + 2}$  and  $\frac{\cos x}{3(\cos x)^2 + 2}$  for  $x = 60^\circ$ .

Press	See Displayed
<b>9</b> <b>DEG</b>	<b>0.00</b> Set degrees mode if not already set.
<b>60</b> <b>A</b>	<b>0.20</b> The answer.
<b>60</b> <b>B</b>	<b>0.18</b> The answer.