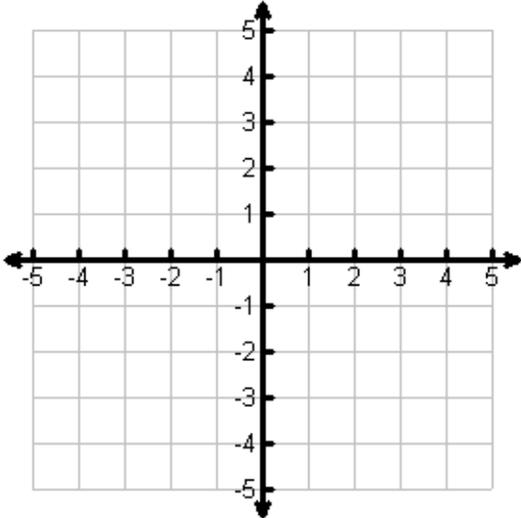


## Connecting and Communicating What We Know About the Derivative of a Function

Symbolic	Graph																																				
<p>Given the function:</p> $g(x) = \frac{3 \cdot x + 5}{5 \cdot x - 3}$ <p>Determine</p> $g'(x) =$																																					
Table	Analysis																																				
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 15%;">x</th> <th style="width: 35%;">g(x)</th> <th style="width: 50%;">g'(x)</th> </tr> </thead> <tbody> <tr><td>-5</td><td></td><td></td></tr> <tr><td>-4</td><td></td><td></td></tr> <tr><td>-3</td><td></td><td></td></tr> <tr><td>-2</td><td></td><td></td></tr> <tr><td>-1</td><td></td><td></td></tr> <tr><td>0</td><td></td><td></td></tr> <tr><td>1</td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td></tr> </tbody> </table>	x	g(x)	g'(x)	-5			-4			-3			-2			-1			0			1			2			3			4			5			<ol style="list-style-type: none"> <li>1. Determine the domain and range of the function <math>g(x)</math>.</li> <li>2. Determine the zeros of <math>g(x)</math>.</li> <li>3. Where is the function <math>g(x)</math> differentiable?</li> <li>4. Determine             <math display="block">\lim_{x \rightarrow \infty} (g(x))</math> <math display="block">\lim_{x \rightarrow (-\infty)} (g(x))</math> </li> <li>5. Graph <math>g'(x)</math> on the axes above.</li> <li>6. Determine the equation of the tangent line of <math>g(x)</math> at the point where the slope is <math>-3/4</math>.</li> <li>7. When is <math>g'(x) = 0</math>? When is <math>g'(x) &gt; 0</math>? When is <math>g'(x) &lt; 0</math>?</li> <li>8. At what point(s), if any, are the tangents to the graph of <math>g(x)</math> horizontal?</li> </ol>
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