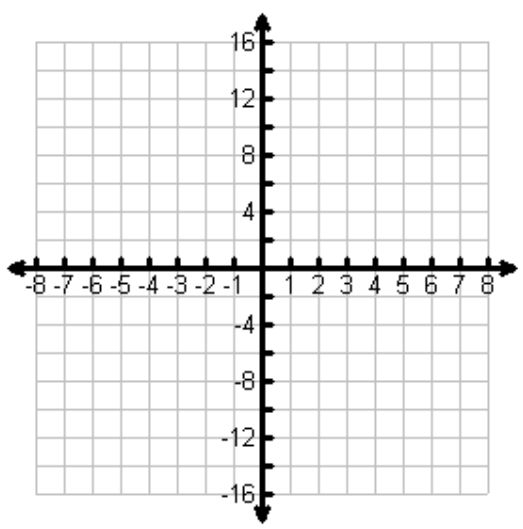


Connecting and Communicating What We Know About the Derivative of a Function

Equation	Graph																																				
<p>Given the function:</p> $f(x) = x^4 - 8x^2 + 7$ <p>Determine</p> $f'(x) =$ $f''(x) =$																																					
Table	Analysis																																				
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">x</th> <th style="padding: 5px;">f(x)</th> <th style="padding: 5px;">f'(x)</th> <th style="padding: 5px;">f''(x)</th> </tr> </thead> <tbody> <tr><td style="padding: 5px;">-3</td><td></td><td></td><td></td></tr> <tr><td style="padding: 5px;">-2</td><td></td><td></td><td></td></tr> <tr><td style="padding: 5px;">-1</td><td></td><td></td><td></td></tr> <tr><td style="padding: 5px;">0</td><td></td><td></td><td></td></tr> <tr><td style="padding: 5px;">1</td><td></td><td></td><td></td></tr> <tr><td style="padding: 5px;">2</td><td></td><td></td><td></td></tr> <tr><td style="padding: 5px;">3</td><td></td><td></td><td></td></tr> <tr><td style="padding: 5px;">4</td><td></td><td></td><td></td></tr> </tbody> </table>	x	f(x)	f'(x)	f''(x)	-3				-2				-1				0				1				2				3				4				<ol style="list-style-type: none"> <li>1. Determine the average rate of change (ARoC) of <math>f(x)</math> over the interval <math>[0, 2]</math>.</li>   <li>2. Graph <math>f'(x)</math> on the axes above.</li>   <li>3. Determine the equation of the tangent line of <math>f(x)</math> at <math>x = -1</math>.</li>   <li>4. At what point(s), if any, are the tangents to the graph of <math>f(x)</math> horizontal?</li>   <li>5. When is <math>f'(x) &gt; 0</math>? When is <math>f'(x) &lt; 0</math>? What does the value of <math>f'(x)</math> tell you about the graph of <math>f(x)</math>?</li>   <li>6. Determine the point(s) on <math>f(x)</math> where <math>f''(x) = 0</math>.</li> </ol>
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