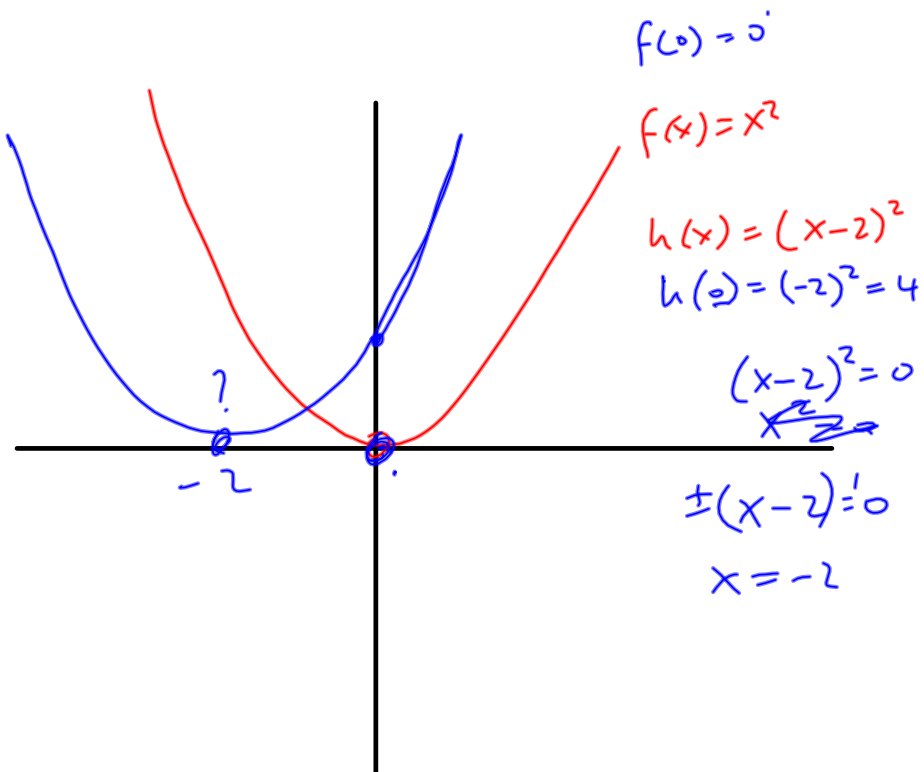
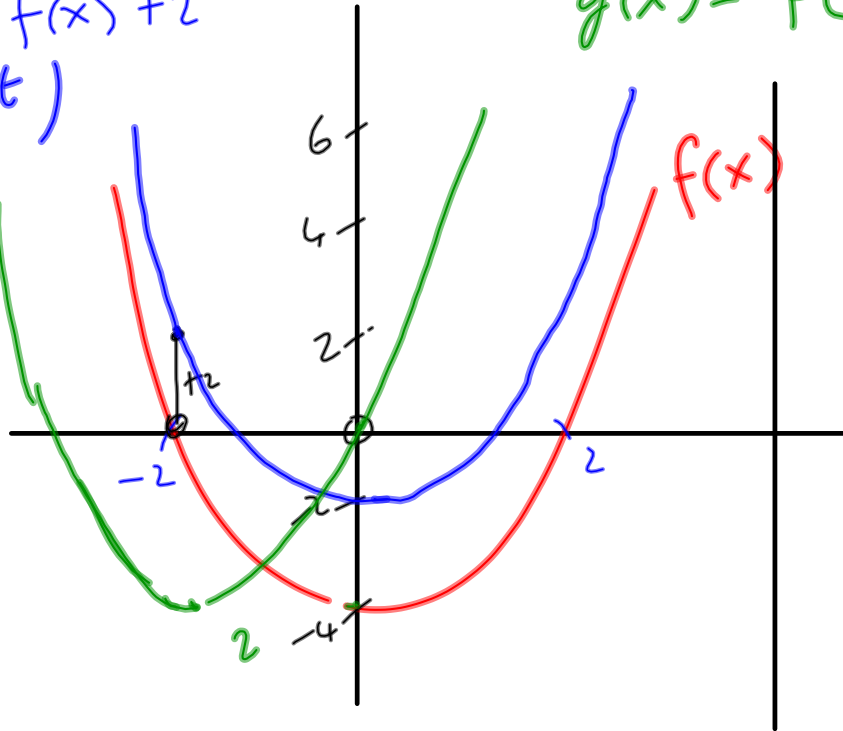
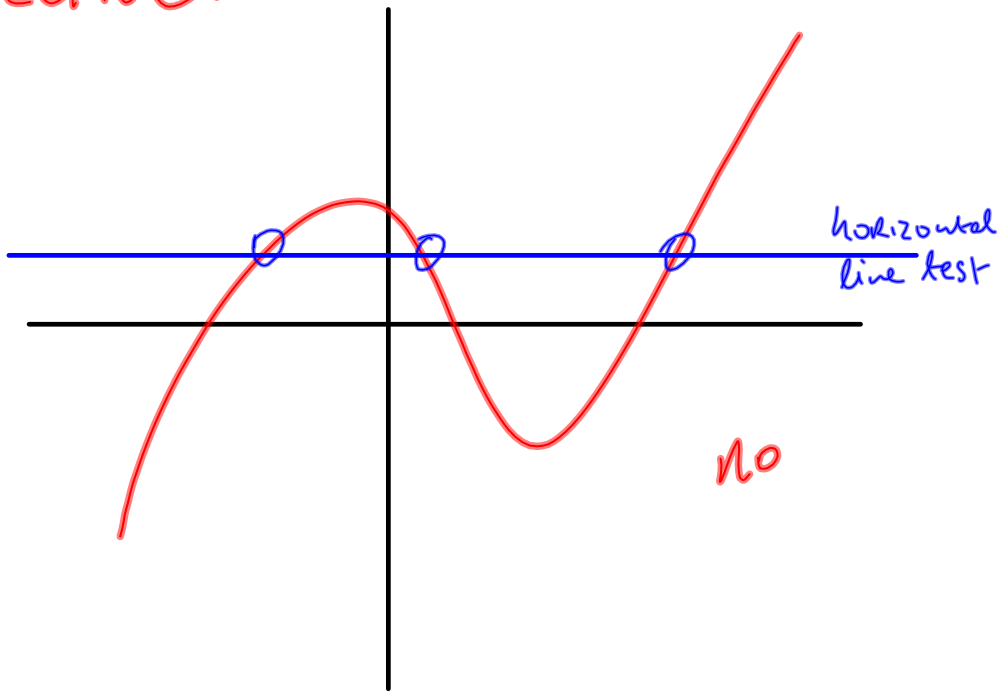


$h(x) = f(x) + 2$   
(shift)  
up

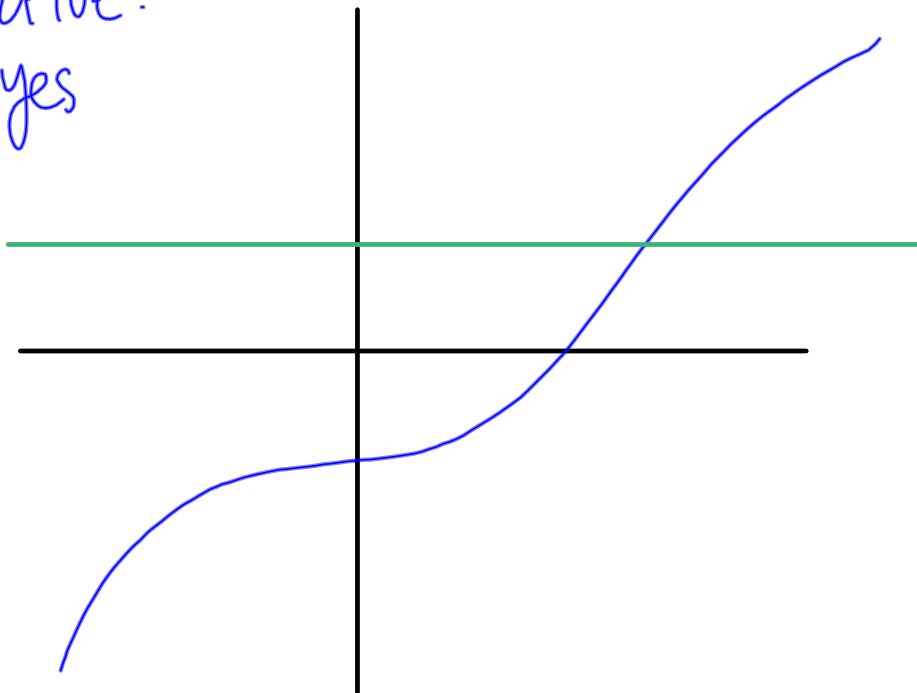
$g(x) = f(x+2)$

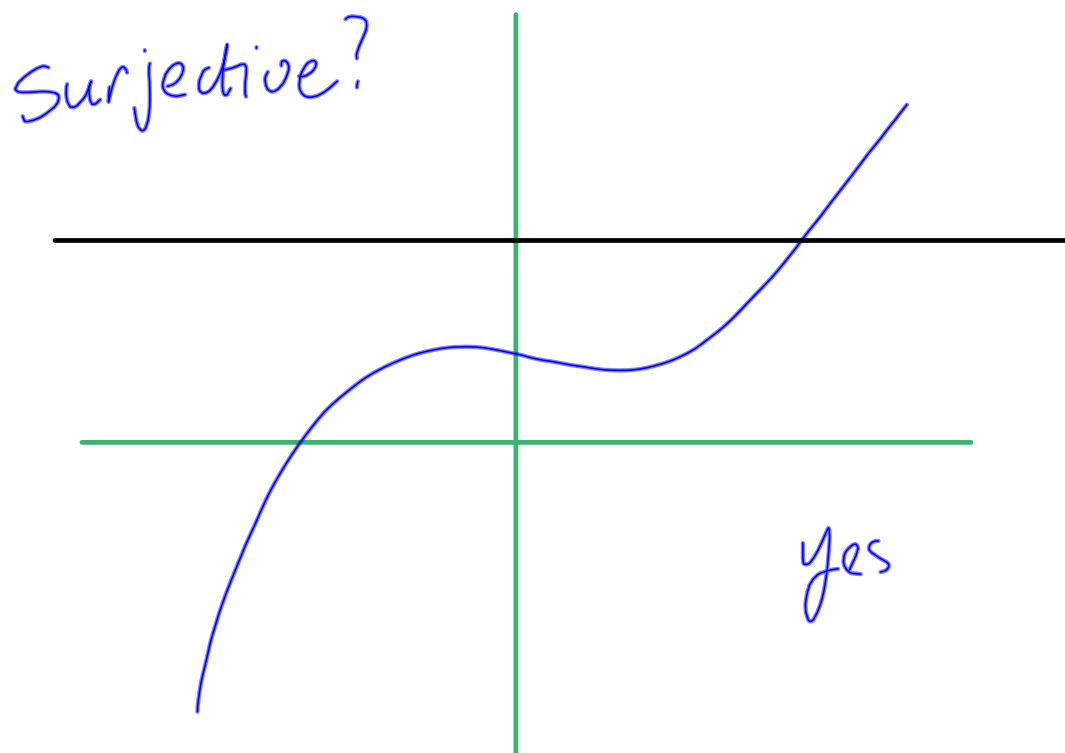
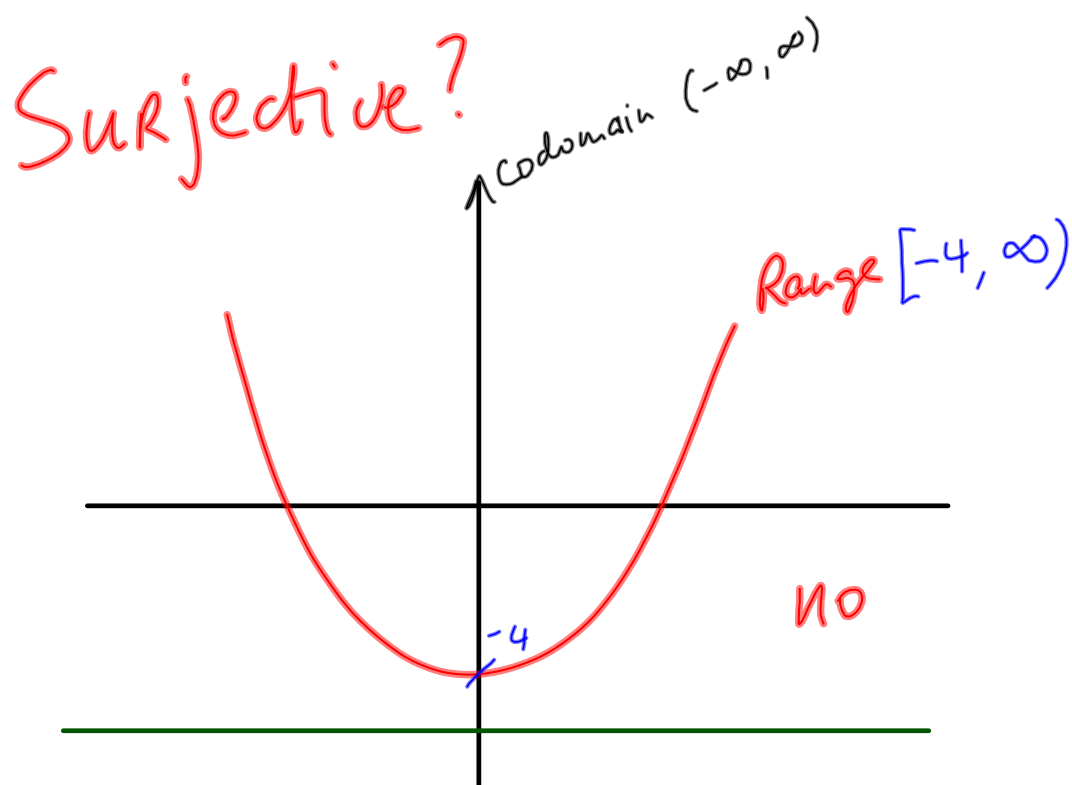


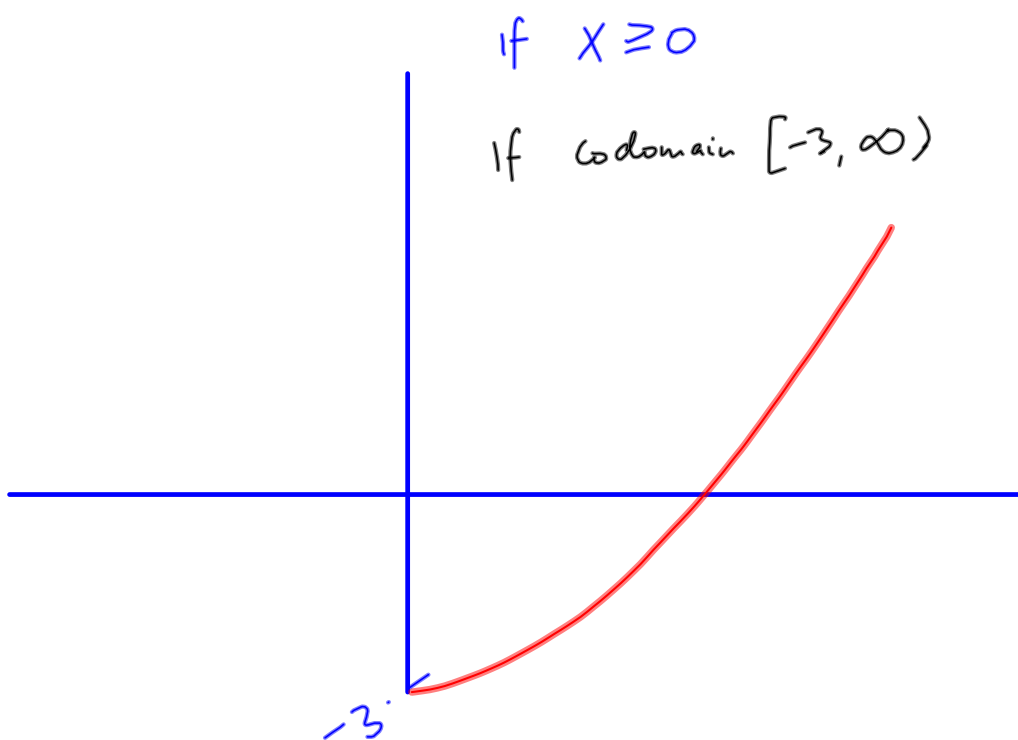
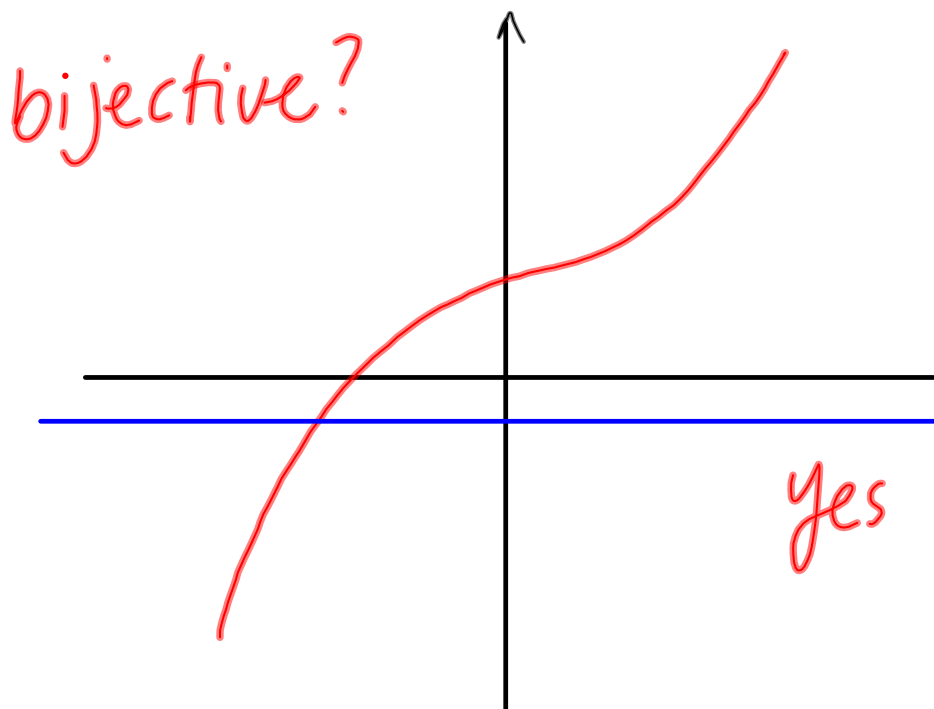
Injective?






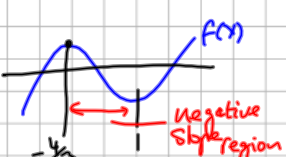
Injective?  
yes

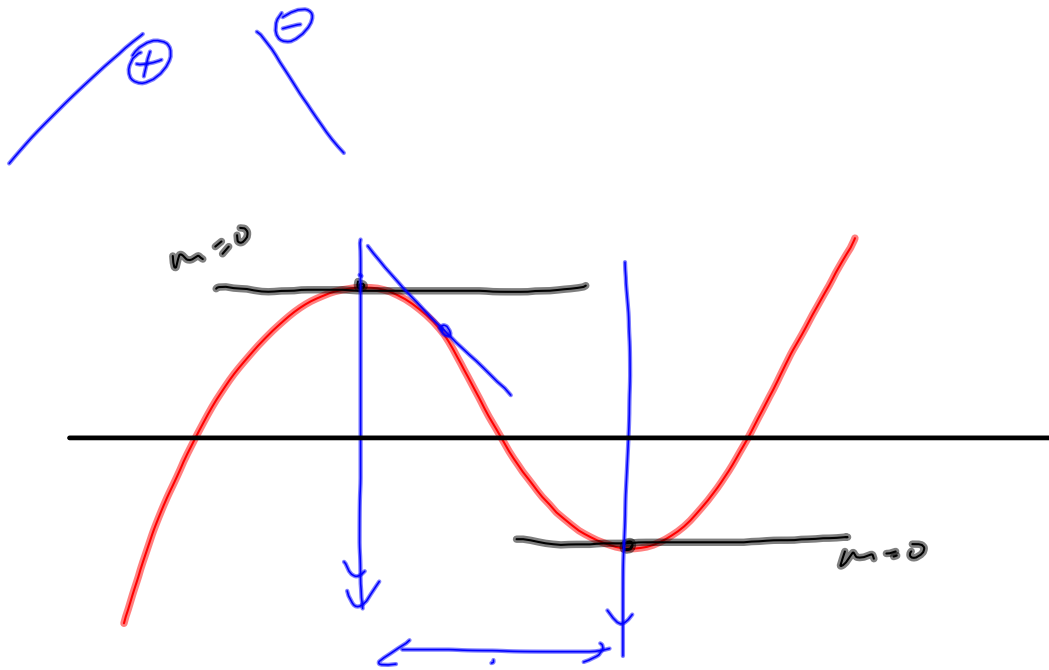






<p>domain <math>-2 \leq x \leq 2</math></p> <p>Shape </p> <p>At max/min <math>f'(x) = 0</math></p> <p>get x values</p> <p>get y values</p>	<p><math>f(x) = 2x^3 + x^2 - 8x - 4</math></p> <p>find max &amp; min</p> <p><math>f'(x) = 6x^2 + 2x - 8</math> slope function</p> <p>At max/min <math>6x^2 + 2x - 8 = 0</math>  <math>\Rightarrow 3x^2 + x - 4 = 0</math>  <math>(3x+4)(x-1) = 0</math>  <math>\Rightarrow x = -\frac{4}{3}, x = 1</math></p> <p><math>f(-\frac{4}{3}) = \frac{100}{27}</math> (max)  <math>f(1) = -9</math> (min)</p>
<p>At max <math>f''(x) &lt; 0</math></p> <p>At min <math>f''(x) &gt; 0</math></p>	<p><math>f''(x) = 12x + 2</math></p> <p><math>f''(-\frac{4}{3}) = 12(-\frac{4}{3}) + 2 = -14 &lt; 0</math>  <math>\Rightarrow</math> max</p> <p><math>f''(1) = 12(1) + 2 = 14 &gt; 0</math>  <math>\Rightarrow</math> min</p>

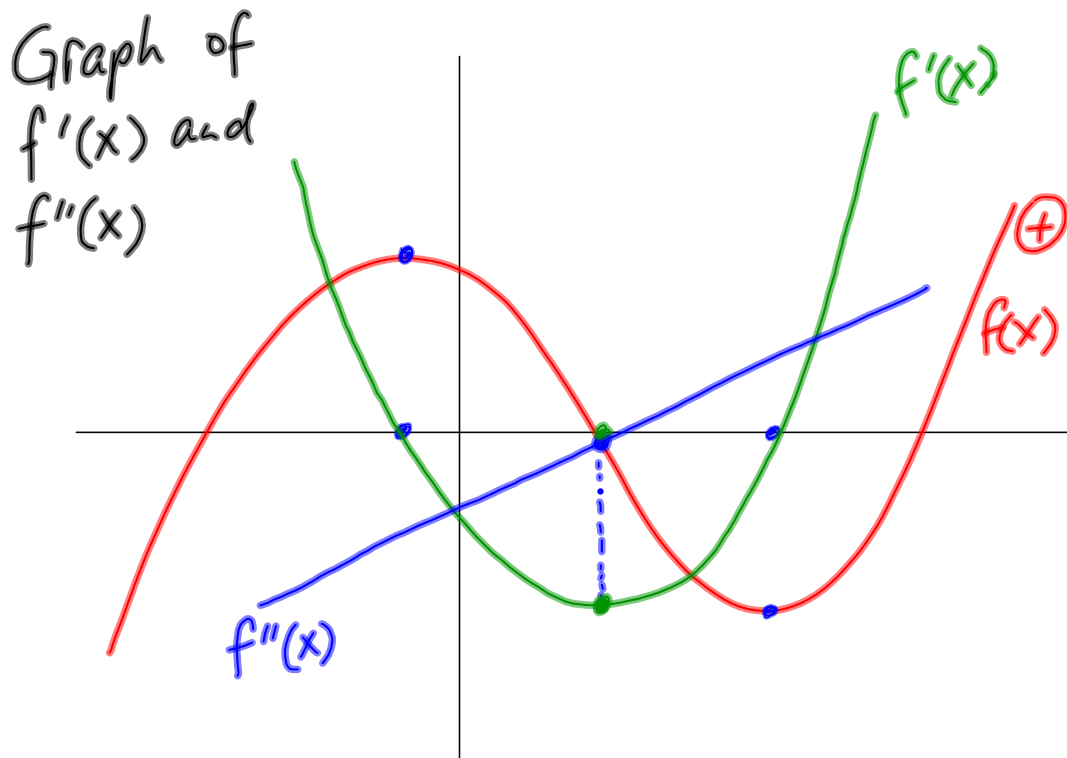
<p>domain <math>-2 \leq x \leq 2</math></p> <p>Shape </p> <p>At max/min <math>f'(x) = 0</math></p> <p>get x values</p> <p>If slope is negative <math>f'(x) &lt; 0</math></p> <p></p> <p></p>	<p><math>f(x) = 2x^3 + x^2 - 8x - 4</math></p> <p>find max &amp; min</p> <p><math>f'(x) = 6x^2 + 2x - 8</math> slope function</p> <p>At max/min <math>6x^2 + 2x - 8 = 0</math>  <math>\Rightarrow 3x^2 + x - 4 = 0</math>  <math>(3x+4)(x-1) = 0</math>  <math>\Rightarrow x = -\frac{4}{3}, x = 1</math></p> <p><math>f'(x) = 6x^2 + 2x - 8 &lt; 0</math></p> <p>(x values are inside)  <math>-\frac{4}{3} &lt; x &lt; 1</math></p>
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$$f(x) = x^2 + 2, \quad x \leq 0 \quad x \in \mathbb{R}$$

$f^{-1}(x) = ?$  Inverse function ?

<p>① let <math>f(x) = y</math></p> <p>② <math>x = ?</math></p> <p style="text-align: center; color: red;">positive</p> <p>③ write inverse fn</p>	$y = x^2 + 2$ $y - 2 = x^2$ $x = \sqrt{y - 2}$ $f^{-1}(x) = \sqrt{x - 2}$
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$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

$$f(x) = 2x^2 - 3x - 6$$

$$f(x+h) = 2(x+h)^2 - 3(x+h) - 6$$

$$= 2[x^2 + 2xh + h^2] - 3x - 3h - 6$$

$$= 2x^2 + 4xh + 2h^2 - 3x - 3h - 6$$

$$\frac{f(x+h) - f(x)}{h} = \frac{4xh + 2h^2 - 3h}{h}$$

$$= 4x + 2h - 3$$

$$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} = 4x + 2(0) - 3$$

$$f'(x) = 4x - 3$$