

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

(a) Derivative of  $f(x)$

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+0.5h) - f(x-0.5h)}{h}$$

(b) Modified form of the derivative of  $f(x)$

10	20	10	200	210	250	250
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$$f'(x) = \frac{f(x+1) - f(x-1)}{2} = \frac{210 - 10}{2} = 100$$

-1	0	1
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derivative filter

(c) Example derivative for a pixel, and derivative filter