



Average Rate of Change - Function and Point plus Delta to Slope Expression

1 Write the expression for the average rate of change of this function from this point over an interval of width h .

$$f(x) = 2x^2$$

$$f(2) = 8$$

$$f(2 + h) = 2(2 + h)^2$$

- | | | | |
|---|--------------------------|---|--------------------------|
| A | $\frac{2(2+h)^2 - 8}{2}$ | B | $\frac{2(2+h)^2 - 8}{h}$ |
| C | $\frac{8 - 2(2+h)^2}{h}$ | D | $\frac{h}{2(2+h)^2 - 8}$ |

2 Write the expression for the average rate of change of this function from this point over an interval of width h .

$$f(x) = 2x^2$$

$$f(-2) = 8$$

$$f(-2 + h) = 2(-2 + h)^2$$

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|---|---------------------------|---|----------------------------|
| A | $\frac{h}{2(-2+h)^2 - 8}$ | B | $\frac{2(-2+h)^2 - 8}{h}$ |
| C | $\frac{8 - 2(-2+h)^2}{h}$ | D | $\frac{2(-2+h)^2 - 8}{-2}$ |

3 Write the expression for the average rate of change of this function from this point over an interval of width h .

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

$$f(0) = 2$$

$$f(0 + h) = 2(0 + h) + 2$$

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|---|----------------------------|---|----------------------------|
| A | $\frac{2 - 2(0+h) + 2}{h}$ | B | $\frac{2(0+h) + 2 - 2}{0}$ |
| C | $\frac{2(0+h) + 2 - 2}{h}$ | D | $\frac{h}{2(0+h) + 2 - 2}$ |

4 Write the expression for the average rate of change of this function from this point over an interval of width h .

$$f(x) = 3x + 3$$

$$f(2) = 9$$

$$f(2 + h) = 3(2 + h) + 3$$

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|---|----------------------------|---|----------------------------|
| A | $\frac{3(2+h) + 3 - 9}{2}$ | B | $\frac{3(2+h) + 3 - 9}{h}$ |
| C | $\frac{h}{3(2+h) + 3 - 9}$ | D | $\frac{9 - 3(2+h) + 3}{h}$ |

5 Write the expression for the average rate of change of this function from this point over an interval of width h .

$$f(x) = \sqrt{x}$$

$$f(2) = 1.4$$

$$f(2 + h) = \sqrt{2 + h}$$

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|---|------------------------------|---|------------------------------|
| A | $\frac{h}{\sqrt{2+h} - 1.4}$ | B | $\frac{1.4 - \sqrt{2+h}}{h}$ |
| C | $\frac{\sqrt{2+h} - 1.4}{2}$ | D | $\frac{\sqrt{2+h} - 1.4}{h}$ |

6 Write the expression for the average rate of change of this function from this point over an interval of width h .

$$f(x) = 2x - 2$$

$$f(1) = 0$$

$$f(1 + h) = 2(1 + h) - 2$$

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|---|----------------------------|---|----------------------------|
| A | $\frac{0 - 2(1+h) - 2}{h}$ | B | $\frac{h}{2(1+h) - 2 - 0}$ |
| C | $\frac{2(1+h) - 2 - 0}{1}$ | D | $\frac{2(1+h) - 2 - 0}{h}$ |

7 Write the expression for the average rate of change of this function from this point over an interval of width h .

$$f(x) = x$$

$$f(-2) = -2$$

$$f(-2 + h) = (-2 + h)$$

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|---|----------------------------|---|---------------------------|
| A | $\frac{(-2+h) - (-2)}{-2}$ | B | $\frac{(-2+h) - (-2)}{h}$ |
| C | $\frac{h}{(-2+h) - (-2)}$ | D | $\frac{(-2) - (-2+h)}{h}$ |

8 Write the expression for the average rate of change of this function from this point over an interval of width h .

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

$$f(-1) = -5$$

$$f(-1 + h) = 3(-1 + h) - 2$$

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|---|--------------------------------|---|---------------------------------|
| A | $\frac{h}{3(-1+h) - 2 - (-5)}$ | B | $\frac{3(-1+h) - 2 - (-5)}{h}$ |
| C | $\frac{(-5) - 3(-1+h) - 2}{h}$ | D | $\frac{3(-1+h) - 2 - (-5)}{-1}$ |