

Math 191-DX01

Test 1

SUBMISSION DEADLINE: 2:30pm Pacific Time

Submit on D2L or email HowardL@camosun.ca

Number of Questions: 6

Total Marks: 20

Show all your work for full marks.

You MAY use the course website (notes, videos etc)

You may NOT copy from others (classmates, tutors, Chegg etc)

Submit jpg or pdf files

Feel free to handwrite your solutions and take photos of your work

1. [3 marks] Evaluate the following limit:

$$\lim_{x \rightarrow -3} \frac{x^2 + 10x + 21}{x^2 - 3x - 18}$$

2. [4 marks] Find the slope of the tangent line to $y = \frac{2}{x}$ using the limit definition.

3. [3 marks] An object's displacement (in metres) is given by $s = 3t^3 - 2t^2 + 6t$, where t is measured in seconds. Find:

a) the object's velocity

b) the object's acceleration

c) the time when the object's acceleration is zero

4. [3 marks] Find $\frac{dy}{dx}$ and evaluate it at $x = 1$:

$$y = (x^9 - x^8 + 2x + 5)(3x^7 + 7x^3)$$

5. [4 marks] Find $f'(2)$ for $f(x) = \frac{x^3 - 11x}{x^2 + 6}$

6. [3 marks] A rectangle's length is eight times its width. Let A be the rectangle's area and w be the rectangle's width. Find the instantaneous rate of change of A with respect to w .