

Math 191-DX01
Take-Home Test 4

Deadline: Wed Nov 25, 2:30pm Pacific Time
Submit on D2L or email HowardL@camosun.ca

Number of Questions: 6
Total Marks: 19

Show all your work for full marks.

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

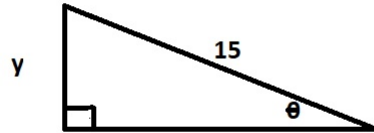
You may NOT copy from others (classmates, tutors, Chegg etc)

Submit jpg or pdf files

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

Covers Sections 27.8, 25.1-25.6, 26.1-26.2

1. [4 marks] Consider the triangle below. Find the rate at which θ is changing when y is 12 cm if y is increasing at 2 cm/s.



2. [2 marks] Evaluate $\int \frac{x}{\sqrt{9x^2+1}} dx$

3. [3 marks] Evaluate $\int_0^1 x^2(2-x^3)^4 dx$

4. [3 marks] Use Simpson's Rule with $n = 6$ and the data below to estimate $\int_7^{10} f(x) dx$

x	$f(x)$
7	98
7.5	112.5
8	128
8.5	144.5
9	162
9.5	180.5
10	200

See next page...

5. [3 marks] A cyclist was travelling at 12 m/s when he hit the brakes. The cyclist's acceleration was $a = -3t$ m/s², where t is the number of seconds after the cyclist hit the brakes.

a) Find a formula for the cyclist's velocity.

b) Find a formula for the cyclist's displacement (measured from his location when he hit the brakes).

c) How many seconds did it take the cyclist to stop?

6. [4 marks] Find the area bounded by $y = -2x$, $y = \sqrt{x}$ and $y = 4$.