

- a) $\frac{\sin 7x}{7}$ b) $\sin 7x$ c) $\cos 7x$ d) $\frac{\cos 7x}{7}$

Question 2

Find the area enclosed by $y = x^2$, $y = 2x - x^2$

$$x^2 = 2x - x^2 \quad \frac{1}{4} \quad \frac{2x-1}{2} \quad -\frac{1}{4}$$

$$2x^2 = 2x$$

$$x^2 = x$$

$$x^2 - x = 0$$

$$x(x-1) = 0$$

$$x = 0 \text{ or } x = 1$$

$$A = \int_0^1 (2x - x^2 - x^2) dx = \int_0^1 (2x - 2x^2) dx$$

$$\int_0^1 (x^2 - \frac{x^3}{3}) dx = \int_0^1 (2x - 2x^2) dx = x^2 - \frac{2x^3}{3} \Big|_0^1$$

$$1 - \frac{2}{3} - 0$$

$$\boxed{\frac{1}{3}}$$

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SEMESTER I EXAMINATION 2022-2023

Math 1411- Quiz 1

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$$g'(x) = 3x^2 + 2x - 1$$

$$0 = 3x^2 + 2x - 1$$

$$(3x - 1)(x + 1)$$

$$3x - 1 = 0 \Rightarrow x = \frac{1}{3}$$

$$x + 1 = 0 \Rightarrow x = -1$$

+ - +
-1 1/3

Question 1

Circle the correct answer

1) Let $g(x) = x^3 + x^2 - x + 1$ then g is increasing on

- a) $(0, \frac{1}{3})$ b) $(-1, \frac{1}{3})$ c) $(\frac{1}{3}, 1)$ d) $(-\infty, -1) \cup (\frac{1}{3}, \infty)$

2) $f(x) = x^{\frac{2}{3}}$ has absolute maximum at $x =$ -1.8

- a) 4 ~~b) 8~~ c) 0 d) -1

3) The value of c at which $f(x) = x^2$, $x \in [1, 4]$ satisfy the mean value theorem is

$$2c = \frac{16 - 1}{3} = \frac{15}{3} = 5$$

- a) 2 ~~b) 5/2~~ c) 3/2 d) 3

4) $\frac{d}{dx} \int_0^{x^3} \sin t dt$ is $\rightarrow \sin x^3 \cdot 3x^2$

- a) $\sin x^3$ b) $\sin 3x^2$ ~~c) $3x^2 \sin x^3$~~ d) $3x^2$

5) $\int \cos 7x dx$ is

$$\int \cos 7x dx \rightarrow \frac{\sin 7x}{7}$$

~~cos~~