

Unique secondary school mathematics test -2 for grade-12

P-1 choose the best answer on the space provided

1, a spherical balloon is being inflated so that its diameter is increasing at a rate of 2cm/min. how quickly is the volume of the balloon increasing when the diameter is 10cm? In cm^2/min .

- A, 100 B, 100π C, 50 D, 50π

2, which one of the following is not true about $f(x) = \frac{x^2}{4x-8}$?

- A, local max, value = 0 B, local min. value = 2 at $x = 4$
C, it is strictly decreasing on $[0,4]$ D, it is strictly increasing on $[4,\infty)$

3, a rectangular playing field is to have area 600m^2 . Fencing is required to enclose the field and to divide it into two equal halves, then the minimum amount of fencing needed to do this is -----m? A, 60 B, 120 C, 180 D, 200

4, $\int_{-3}^2 x|x| dx = ?$ A, -9 B, $\frac{8}{3}$ C, 9 D, $-\frac{19}{3}$

5, what is the area of the region bounded between $f(x) = x^2 + 4x + 3$ and x-axis from $x = -4$ to $x = 0$ in u^2 ? A, $\frac{4}{3}$ B, $\frac{8}{3}$ C, 4 D, $\frac{16}{3}$

P-ii work out show all the necessary steps

6, for $f(x) = \sqrt[3]{x} \sqrt{(x+3)^2}$ find

i, interval of increasing and decreasing. ii, local extreme values.

7, if $f(x) = x^4 + ax^2 + b$ has local minimum value at (1,0)

Then $a = ?$, $b = ?$

8, $\int_{-3}^3 x^2|x| dx = ?$

9, the area of the largest rectangle that can be inscribed in a semi-circle of radius 2cm is ----- cm^2 .

10, what is the area the region bounded between $f(x) = -x^3 + 1$ and x-axis from $x = -1$ to $x = 2$?

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