

# Unofficial Mark Scheme Edexcel Core 2 answers only

X\_IDE\_sidf

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1 Geometric series question, prove  $a = 64$  given  $S_4 = 175$  and  $r = \frac{3}{4}$  then workout sum to infinity. Then find the difference between the 9th and 10th term

- 1 a) (2 marks) proof
- b) (2 marks) 256
- c) (2 marks) 1.602

2 Trapezium rule.  $y = 8 - 2^{x-1}$  in the interval  $[0, 4]$  with 4 trapeziums

- 2 a) (1 mark) 7
- b) (3 marks) 20.75
- c) (2 marks) 5.75

3 Circle centred at  $(7, 8)$ . Find the equation of it and of a tangent at point  $(10, 13)$

- 3 a) (2 marks)  $\sqrt{34}$
- b) (3 marks)  $(x - 7)^2 + (y - 8)^2 = 34$
- c) (4 marks)  $3x + 5y - 95 = 0$

4 where  $f(x) = 6x^3 + 13x^2 - 4$  find the remainder when divided by  $(2x + 3)$  then factorise it fully given  $(x + 2)$  is a factor.

- 4 a) (2 marks) 5
- b) (2 marks)  $f(-2) = 0$
- c) (4 marks)  $f(x) = (x + 2)(3x + 2)(2x - 1)$

5 Expansion of  $(2 - 9x)^4$ . The using that expand  $(1 + kx)(2 - 9x)^4$  in the form  $A - 232x + Bx^2$  given the coefficient of  $x$

- 5 a) (4 marks)  $16 - 288x + 1944x^2$
- b) (1 mark) 16
- c) (2 marks)  $\frac{7}{2}$
- d) (2 marks) 936

6  $1 - 2\sin(\theta - \frac{\pi}{5}) = 0$  solve for  $\theta$  and  $4\cos^2 x + 7\sin x - 2 = 0$

- 6 i) (3 marks)  $\frac{8\pi}{15}$  or  $\frac{-2\pi}{15}$
- ii) (6 marks)  $345.5^\circ$  or  $194.5^\circ$

7 This was  $\int(3x - x^{\frac{3}{2}})dx$  and then find the limits (where it crossed the  $x$  axis.

7 a) (3 marks)  $\frac{3}{2}x^2 - \frac{2}{5}x^{\frac{5}{2}} + c$

b) (3 marks) 24.3

8  $\log_3(3b + 1) - \log_3(a - 2) = -1$ , write  $b$  in terms of  $a$  then find  $x$  given  $2^{2x+5} - 7(2^x) = -1$ .

8 i) (3 marks)  $b = \frac{3a-5}{9}$

ii) (4 marks) -2.19

9 Find optimum perimeter of a funny shape which comprised a rectangle, sector and a equilateral triangle, need diagram.

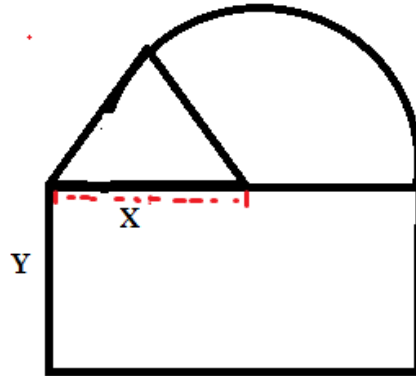


Image by Cake\_Chan Equations given, that needed proving are,  $y = \frac{500}{x} - \frac{x}{24}(4\pi + 3\sqrt{3})$  and  $P = \frac{1000}{x} + \frac{x}{24}(4\pi + 36 - 3\sqrt{4})$

9 a) (2 marks)  $\frac{\pi x^2}{3}$

b) (3 marks) proof of the  $y =$  equation

c) (3 marks) proof of the  $p =$  equation

d) (5 marks)  $x = 16.63$   $P = 120m$

e) (2 marks)  $f''x = 0.437 > 0 \therefore$  is a minimum at  $x$