

STudent ID: 2005231

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Math Further Mathematics Exam 05/06/21

Module Code: ACHA 4006

Question 1

①  $y = 7x^3 - 2x^2 + x + 2$

~~$\frac{dy}{dx}$~~   $\frac{dy}{dx} = 21x^2 + 4x^2$

$y = (x+1)(x+5)$

$y = x^2 + 6x + 5 \quad dy = 2x + 6$

2. (i)  $y = (x+3)(x+2)$   
 $y = 3x + x^2$

$y = 3x^2 + x$   
 $= 3x^2 + 2x + C$

(iii)  ~~$y = \frac{1}{x^3} + \sin 3x$~~

(iii)  $y = \frac{1}{x^3} + \sin 3x$

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$$(v) y = \frac{e^{2x}}{\cos^2 x}$$

$$y = ex^2 + \cos 2x + \frac{1}{2}$$

$$(vi) y = (5x^2 + 2x + 1)^5$$

$$y = 5^2 + 2x + 1$$

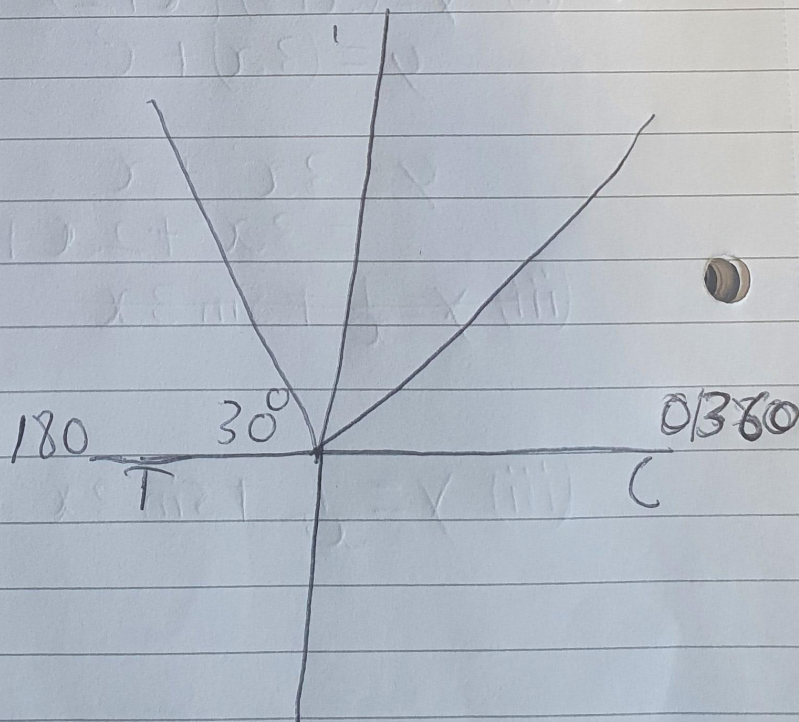
$$y = 10 + x + 5$$

## Question 2

$$(i) \sin x = 0.65$$
$$x = \sin^{-1}(0.65)$$
$$x = 30$$

$$(ii) 7 \cos x = 4$$

$$x = 180 - 30$$
$$x = 150^\circ$$



$$(iii) \tan x = 0.22$$
$$x = \tan^{-1} x$$
$$= 30^\circ$$

### Question three

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Angle for A

$$= 16m \times 18$$

$$= 288m$$

### Question 4

$$P = \sqrt{\frac{xy}{T}} + 3$$

$$P = Py^3$$

### Question Five

Solve the following equations for  $x$ .

$$(i) \quad 5^{x+2} = 2x$$

$$8x + 2$$

$$2x$$

$$= 10x$$

Question 5 Continuation)

(ii)  $x^2 + 2 + \log$

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$$x^2 + 2 = 3$$

$$(x+3) = 2 \log(x+1)$$

(iii)

Question Six

Integrate

(i)  $\int x^4 + 3x^2 - 3x + 1 dx$

$$x^4 - 6x^2 = 3$$

$$3x^2 - 3x + 1 dx$$

$$3x + 1 dx$$

$$3 + 1 = dx$$

(ii)  $\int (x-1)(x-3) dx$

$$1x - x^3 + dx$$

$$= 1x + dx$$

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$$(iii) \int 3 \sec^2 2x \, dx$$

$$3x^2 + dx$$

$$3 + dx$$

$$(iv) \int_0^4 (x+3)(x+2) \, dx$$

$$x+3 + dx$$

$$x \cdot 2^x \cdot 2^3 + 4$$

$$2x+4 = dx$$