

05/05/2022

ACHA4006

2005245

a

Question 1

$$i) y = 5x^4 + 5x^2 + 3x - 19$$

$$y = \frac{dy}{dx} (5x^4 + 5x^2 + 3x - 19)$$

$$y = \frac{dy}{dx} (5x^4) + \frac{dy}{dx} (5x^2) + \frac{dy}{dx} (3x) - \frac{dy}{dx} (19)$$

$$y = 5 \times 4x^3 + 5 \times 2x + 3 - 0$$

$$\frac{dy}{dx} = 20x^3 + 10x + 3$$

$$ii) y = (2x+5)(x-1)$$

$$y = (2x+5)(1) + (x-1)(2)$$

$$y = 4x + 3$$

$$\frac{dy}{dx} = 4x + 3$$

$$iii) y = \frac{1}{x^6} - \cos 5x$$

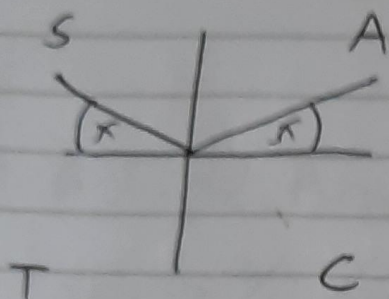
$$y = x^{-6} - \cos 5x$$

$$\frac{dy}{dx} = -5x^{-7} - 5\cos 5x$$

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Question 2

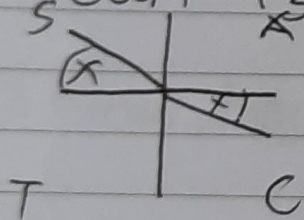
or i) $\sin x = 0.43$
 $x = \sin^{-1}(0.43)$
 $x = 25.47^\circ$



$$x = 180^\circ - 25.47^\circ$$
$$x = 154.53$$

ii) $5 \tan x = -7$

$$\tan^{-1}\left(\frac{-7}{5}\right) = -54.46 \quad x = 54.46^\circ$$

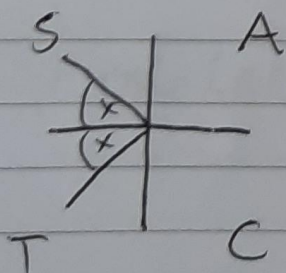


$$x = 180 - 54.46$$
$$x = 125.54^\circ$$

$$x = 360 - 54.46$$

$$x = 305.54$$

iii) $5 \cos x = 3$
 $x = \cos^{-1}\left(\frac{3}{5}\right) = 53.13$



$$x = 180 - 53.13$$

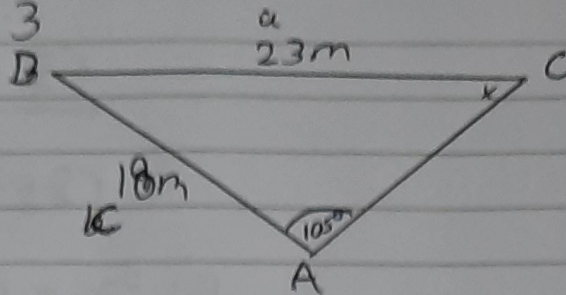
$$x = 126.87$$

$$x = 360 + 53.13$$

$$x = 233.13$$

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Question 3



i) Find Angle C

$$\frac{\sin 105^\circ}{23} = \frac{\sin x}{18}$$
$$23 \div 18 = 1.23$$
$$\frac{\sin 105^\circ}{1.23}$$

ii) Find Angle B

c) Find Length AC

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Question 4

$$y = \frac{t(x^2 + R)}{\theta}$$

$$y\theta = t(x^2 + R)$$

$$t(y\theta) = x^2 + R$$

$$t(y\theta) + R = x^2$$

$$\sqrt{t(y\theta) + R} = x$$

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Question 5

i) $3^{x+4} = 7^x$

~~$\log 3^{x+4} = \log 7^x$~~

$$\log 3^{x+4} = \log 7^x$$

$$(x+4) \log 3 = x \log 7$$

$$(x+4) 0.48 = 0.85x$$

$$0.48x + 0.48 = 0.85x$$

$$0.48x - 0.85x = -0.48$$

$$-0.37x = -0.48$$

$$x = \frac{0.48}{0.37}$$

$$x = 1.29$$