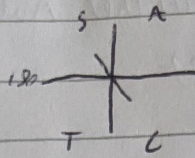


iii $\tan x = -0.22$

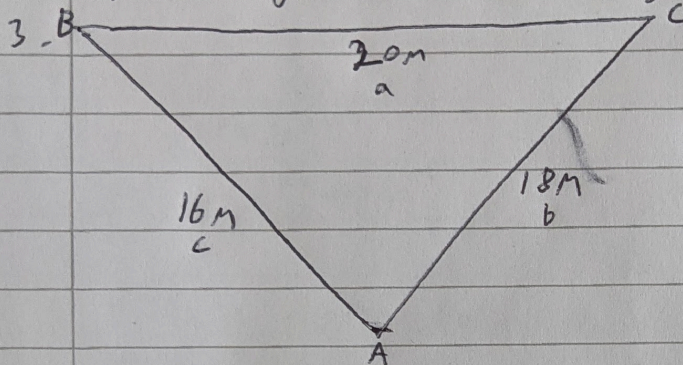
$$x = \tan^{-1}(0.22) \rightarrow 12.41^\circ$$

$$x = 180^\circ - 12.41^\circ = 167.59^\circ$$

$$x = 360^\circ - 12.41^\circ = 347.59^\circ$$



Find angle A of the following triangle



$$20^2 = 18^2 + 16^2 - 2(18)(16)\cos A$$

$$400 = 324 + 256 - 576\cos A$$

$$-180 = -576\cos A$$

$$\frac{-180}{576} = \cos A$$

$$-0.31 = \cos A$$

$$A = \cos^{-1}(-0.31)$$

$$\hat{A} = 108.06^\circ$$

Transpose the following to get [x]

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

$$P^2 = \frac{xy}{T} + 3^2$$

$$P^2 T = xy + 3^2 T$$

$$P^2 T - 3^2 T = xy$$

$$P^2 T - 9T = xy \quad \text{This is a } y$$

$$\frac{P^2 T - T(P^2 - 9)}{y} = x$$

Solve the following equations for x

5. $5^{x+2} = 2^x$

$$\log 5^{x+2} = \log 2^x$$

$$(x+2)\log 5 = x\log 2$$

$$(x+2)0.70 = x0.30$$

$$x0.70 + 1.4 = x0.30$$

$$1.4 = x0.30 - x0.70$$

$$1.4 = -0.4x$$

$$\frac{1.4}{-0.4} = x$$

$$x = -3.5$$

Further mathematics exam

Differentiate the Following

i) $y = 7x^3 - 2x^2 + x + 2$

$$\frac{dy}{dx} = 21x^2 - 4x + 1$$

ii) $y = (x+3)(x+2)$

$$y = x^2 + 2x + 3x + 6 \rightarrow x^2 + 5x + 6$$

$$\frac{dy}{dx} = 2x + 5$$

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

$$y = x^{-3} + \sin 3x$$

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

iv) $y = x^4 \tan 2x$

$$\frac{dy}{dx} = 2x^4 \sec^2 2x$$

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

$$\frac{dy}{dx} = \frac{2e^{2x}}{2 \sin 2x} \rightarrow \frac{2e^{2x}}{2 \sin 2x}$$

vi) $y = (5x^2 + 2x + 1)^5 \rightarrow 5x^7 + 2x^5 + 1$

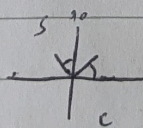
$$\frac{dy}{dx} = 35x^6 + 10x^4$$

Solve the Following trigonometric Equations

2) i) $\sin x = 0.65$

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

$$x = 40.54^\circ$$



$$x = 90^\circ + 40.54^\circ = 130.54^\circ \times \text{'sin } 130 \neq 0.65 \text{'}$$

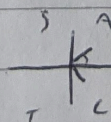
$$x = 180^\circ - 40.54^\circ = 139.46^\circ$$

ii) $7 \cos x = 4$

$$\cos x = \frac{4}{7}$$

$$x = \cos^{-1}(\frac{4}{7})$$

$$x = 55.15^\circ$$



$$x = 360 - 55.15 = 304.85^\circ$$

$$\cos 304.85 = 0.57 \checkmark$$

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

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

$$x^2 + 3x + 2x + 6 = x^2 + x + x + 1$$

$$3x = -5$$

$$x = \frac{-5}{-3} \quad x = 1.67$$

Integrate the Following

$$6i) \int x^4 + 3x^2 - 3x + 1 \, dx$$

$$\frac{x^5}{5} + \frac{3x^3}{3} - \frac{3x^2}{2} + x + C$$

$$= \frac{x^5}{5} + x^3 - \frac{3x^2}{2} + x + C$$

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

$$\int x^2 - 3x - x + 3 \, dx$$

$$\int x^2 - 4x + 3 \, dx$$

$$= \frac{x^3}{3} - \frac{4x^2}{2} + 3x + C$$

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

$$3 \int \sec^2 2x$$

$$3 \int \frac{1}{2} \tan 2x + C$$

$$\cancel{3 \int 0.02x + C} \rightarrow 3 \int 0.02x + C$$

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

$$\int_0^4 x^2 + 2x + 3x + 6 \rightarrow x^2 + 5x + 6$$

$$4 [4^2 + 5(4) + 6] - [6] = \underline{36} \text{ is the area}$$

$$v) \int_2^3 x(x+1)e^x \, dx$$

$$\int_2^3 x^2 + x + e^x$$

$$[3^2 + 3 + e^3] - [2^2 + 2 + e^2] = \underline{18.70} \text{ is the area}$$

$$32.09$$

$$13.39$$