

Q1)

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

$$\frac{dy}{dx} = 21x^2 - 2(2x) + 1$$
$$= 12x^2 - 4x + 1$$

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

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

$$y = x^2 + 5x + 6$$

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

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

$$y = x^3 + 3 \cos 3x$$

$$\frac{dy}{dx} = -3x^2 + 3 \cos 3x$$

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

$$\frac{dy}{dx} = 3x^2 \times 2 \sec^2 2x$$

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

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

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

$$y = (10x + 2)^5$$

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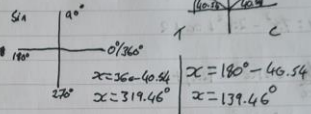
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Q2)

i) $\sin x = 0.65$

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

$x = 40.54$



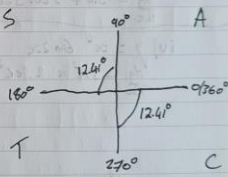
ii) $7 \cos x = 4$

iii) $\tan x = -0.22$

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

$x = 12.41$

$x = 180 - 12.41$ $x = 360 - 12.41$
 $x = 167.59$ $x = 347.59$



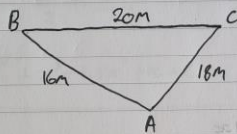
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Q2)

Q3) Find Angle A



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

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

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

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

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

$$0.3125 = \cos A$$

$$A = \cos^{-1}(0.3125)$$

$$A = 71.79^\circ$$

Q4)

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Q5)

i) $5^{x+2} = 2^x$

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

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

$$(x+2) 0.699 = 0.301x$$

$$0.699x + 1.398 = 0.301x$$

$$0.699x - 0.301x = -1.398$$

$$0.398x = -1.398$$

$$x = \frac{-1.398}{0.398}$$

$$x = -0.28$$

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

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

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

$$x^2 + 3x + 4x + 12 = x^2 + 2x + x + 1$$

$$7x + 12 = 2x + 1$$

$$7x - 2x = 1 - 12$$

$$5x = -11$$

$$x = \frac{-11}{5}$$

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

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

$$= \frac{x^5}{5} + x^3 - 1.5x^2 + x + C$$

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)

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

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

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

$$= \frac{2}{3} \tan 3x + C$$

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

$$\int_0^4 x^2 + 2x + 3x + 6 \, dx$$

$$\int_0^4 x^2 + 5x + 6 \, dx$$

$$\left[\frac{x^3}{3} + \frac{5x^2}{2} + 6x + C \right]_0^4$$

$$\left[\frac{5^3}{3} + 5 \left(\frac{4^2}{2} \right) + 6(4) + 10C \right]$$

$$= 41.67 + 40 + 24 + C$$

$$= 105.67$$

THANK
YOU!

