

11.34am

11/11/20

ACHA4000/ACMA4006

1910311 (Jacob James)

Question 3

a.

i) $12x^2 = 31x + 15$

$$12x^2 - (31x + 15) = 31x + 15 - (31x + 15)$$

$$12x^2 - 31x - 15 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-31) \pm \sqrt{(-31)^2 - 4(12)(-15)}}{2(12)}$$

$$x = \frac{31 \pm \sqrt{1681}}{24}$$

$$x = 3, x = 0.42$$

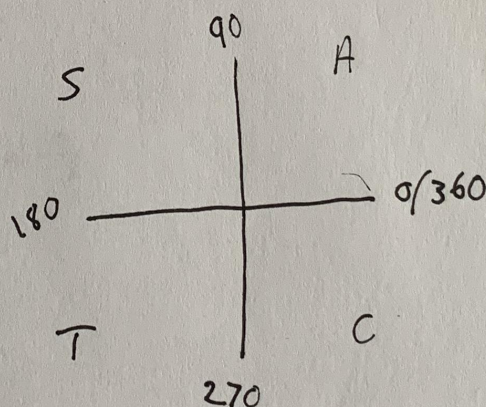
b) i) $\cos x = 0.62$

$$x = \cos^{-1}(0.62)$$

$$x = 51.68$$

$$x = 360 - 51.68$$

$$x = 308.32$$



ii) $7 \sin x = 4$

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

$$x = 34.85$$

$$x = 145.15$$

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Question 2

a) i) $y = 8x^3 - 2x^2 + x + 10$

$$\left(\frac{dy}{dx} = 24x^2 - 4x + 1 \right) = \underline{\underline{20x^2 + 1}}$$

ii) $y = (5x - 3)(6x - 1)$

$$y = 5(6x - 1) + 6(5x - 3)$$

$$\left(\frac{dy}{dx} = 60x - 23 \right)$$

iii) $y = \frac{3}{\sqrt{x}} + \ln x$

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iii) iv) $y = 5 \sin \frac{x}{2} - 6 \cos 3x - \tan \frac{x}{-3}$