

Question One

$$a) V_{min} = \sqrt{\frac{W}{S} \times \frac{2}{P} \times \frac{1}{C_L}}$$

$$V_{min}^2 = \frac{W}{S} \times \frac{2}{P} \times \frac{1}{C_L}$$

$$V_{min}^2 \times P \times C_L = \frac{W}{S} \times 2 \times 1$$

$$\frac{2W \times 1}{V_{min}^2} = S P C_L$$

$$\frac{V_{min}^2 \times P \times C_L}{2 \times 1} =$$

$$\frac{2W \times 1}{V_{min}^2 \times P \times C_L} = S$$

$$S = \frac{2 \times 490332 \times 1}{200^2 \times 0.41 \times 0.52} = 114.993$$

$$114.99 \text{ m}^2$$

b) solve for x

$$i) \frac{8x-3}{5} = \frac{-5x+6}{-3}$$

$$-24x+9 = -25x+30$$

$$9-30 = -x$$

$$-21 = -x$$

$$x = 21$$

$$ii) \frac{(4x-1)}{3} - \frac{x}{4} = \frac{(4x+3)}{2}$$

$$\frac{2(4x-1)}{6} - \frac{2x}{4} = \frac{12(4x+3)}{12}$$

$$8x-1-2x = 48x+3$$

$$ii) \frac{(4x-1)}{3} - \frac{x}{4} = \frac{4x+3}{2}$$

$$\frac{4x-1}{3} = \frac{4x+3}{2} + \frac{x}{4}$$

$$\frac{4}{3}x - 1 = 2\frac{1}{4}x + 1.5$$

$$\frac{4}{3}x - 2\frac{1}{4}x = 2.5$$

$$1.3x - 2.25x = 2.5$$

$$-0.95x = 2.5$$

$$x = \frac{2.5}{-0.95} = -2.72$$

$$iii) 2\log(5x+3) = \log(x+1) + \log(x+2)$$

$$(5x+3)^2 = (x+1)(x+2)$$

$$25x^2 + 30x + 9 = x^2 + 3x + 2$$

$$24x^2 + 27x + 7 = 0$$

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

$$x = -0.405 \text{ or } -0.720$$