

Review Worksheet - Solutions (16th March - 30th March)(i)
1 (a)

$$3x^2 + x - 4 = 0$$

$$3x - 4 = -12$$

$$3x^2 - 3x + 4x - 4 = 0$$

$$\begin{array}{l} \wedge \\ 4, -3 \end{array}$$

$$3x(x-1) + 4(x-1) = 0$$

$$(x-1)(3x+4) = 0$$

 \therefore

$$x-1 = 0$$

$$\underline{x = 1}$$

$$3x+4 = 0$$

$$3x = -4$$

$$\underline{x = \frac{-4}{3}}$$

(ii)

1 (b)

$$2x^2 - 13x + 15 = 0$$

$$2x^2 - 10x - 3x + 15 = 0$$

$$2 \times 15 = 30$$

$$2x(x-5) - 3(x-5) = 0$$

$$\begin{array}{l} \wedge \\ -3, -10 \end{array}$$

$$(x-5)(2x-3) = 0$$

 \therefore

$$x-5 = 0$$

$$\underline{x = 5}$$

$$2x-3 = 0$$

$$2x = 3$$

$$\underline{x = \frac{3}{2}}$$

b. $x^2 - 3x + 9 = 0$

$a=1, b=-3, c=9$

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

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(9)}}{2(1)}$$

Answer: No real solutionsNB -27 under the radical

$$x = \frac{3 \pm \sqrt{9-36}}{2}$$

$$x = \frac{3 \pm \sqrt{-27}}{2}$$

$$b \text{ (ii) } 2x^2 - 7x + 15 = 10$$

$$2x^2 - 7x + 15 - 10 = 0$$

$$2x^2 - 7x + 5 = 0$$

$$a = 2, b = -7, c = 5$$

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

$$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(5)}}{2(2)}$$

$$x = \frac{7 \pm \sqrt{49 - 40}}{4}$$

$$x = \frac{7 \pm \sqrt{9}}{4}$$

$$x = \frac{7 \pm 3}{4}$$

Solutions

$$x = \frac{7+3}{4}$$

$$x = \frac{7-3}{4}$$

$$x = \frac{10}{4}$$

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

$$\underline{x = \frac{5}{2}}$$

$$\underline{x = 1}$$

(c) Sketch

$$(i) f(x) = 3x^2 + x - 4 = 0$$

$$\text{Solutions } x = 1$$

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

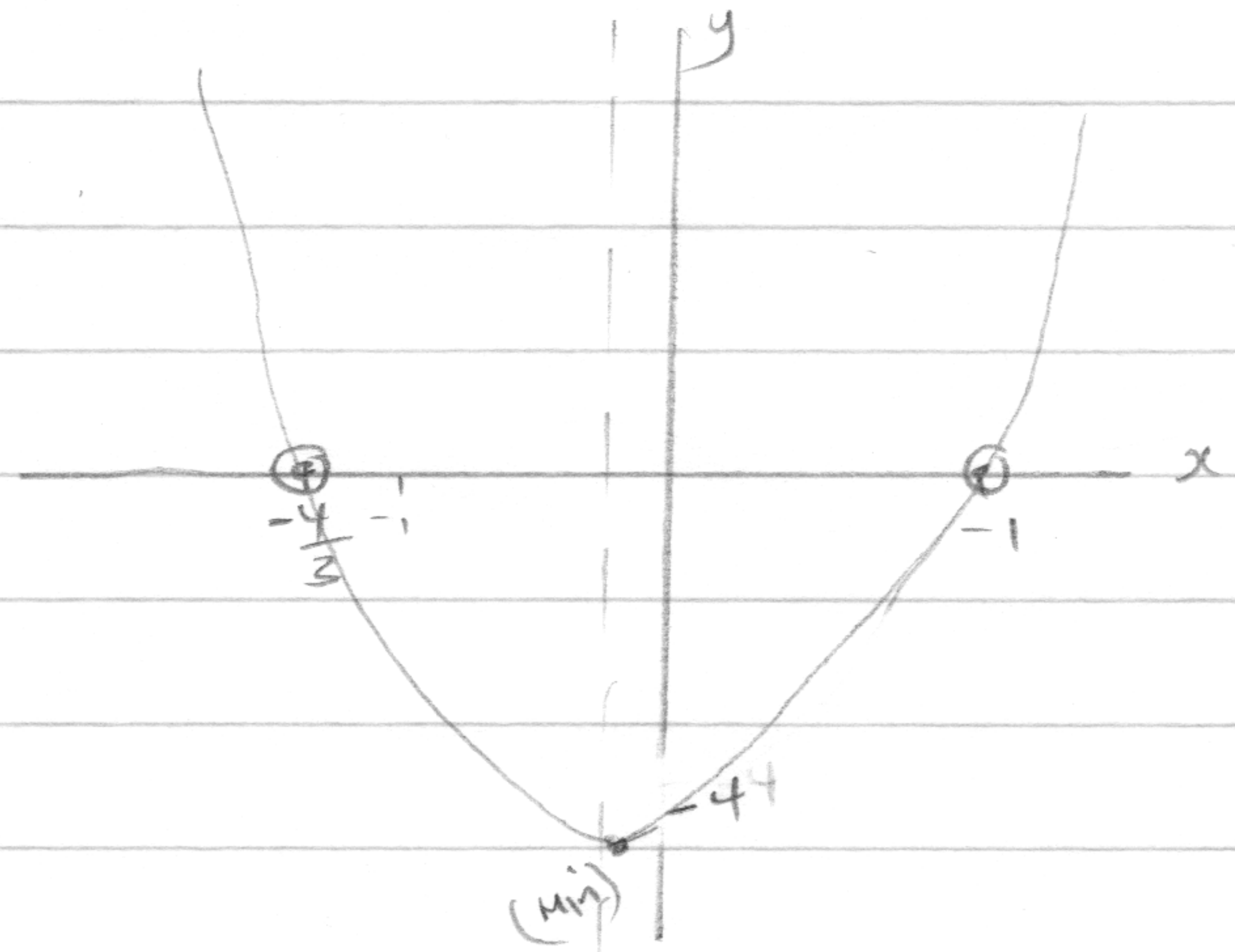
y intercept -4.

axis of symmetry,

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

$$x = -\frac{1}{6}$$

$$\text{min } 3\left(-\frac{1}{6}\right)^2 + \left(-\frac{1}{6}\right) - 4 = \frac{-49}{12} = -4.08\bar{3}$$



$$1 \quad (c) \quad f(x) = 2x^2 - 13x + 15 = 0$$

$$\text{Solutions } x = 5$$

$$x = \frac{3}{2}$$

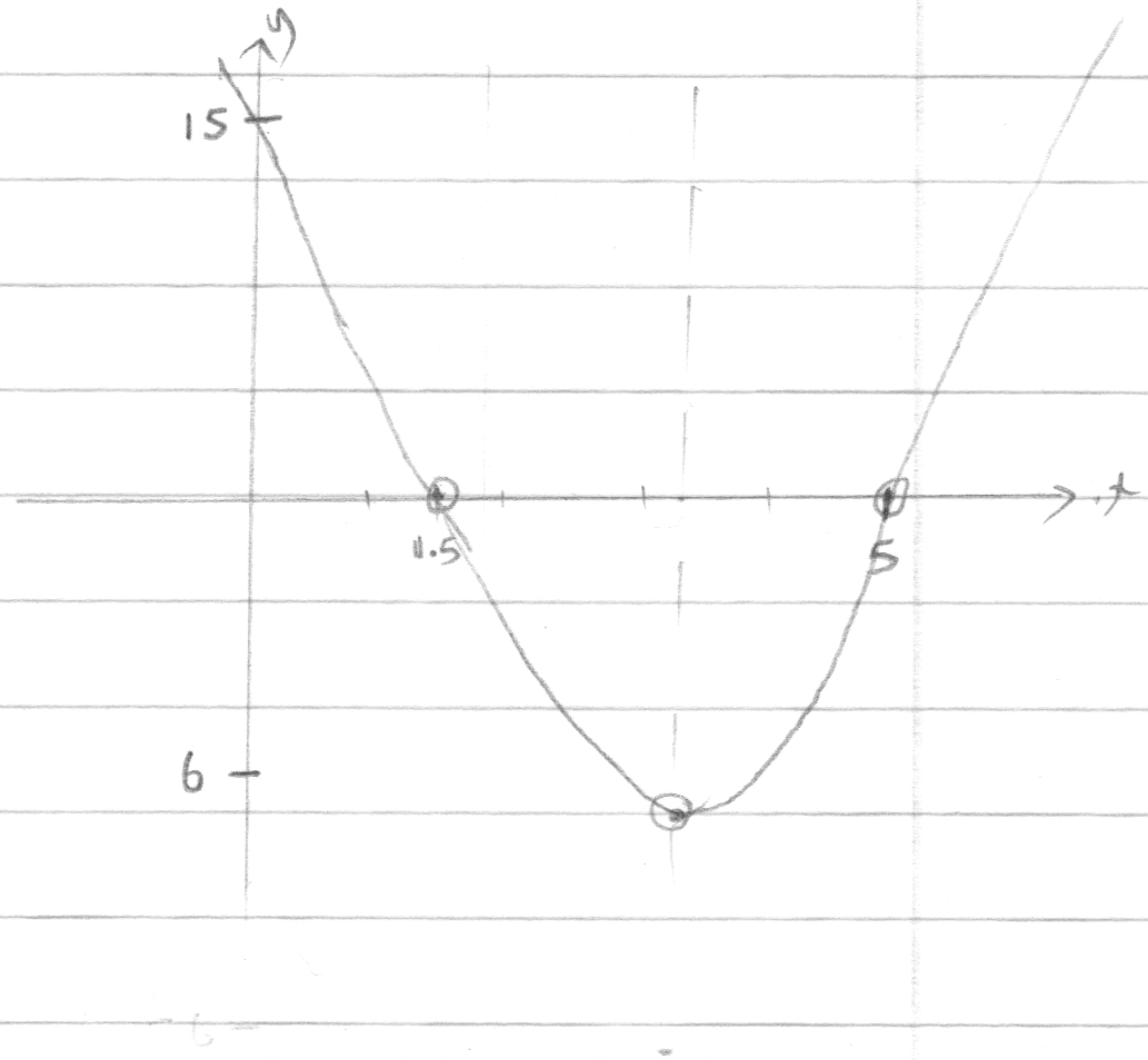
$$y \text{ intercept } (0, 15)$$

axis of symmetry

$$x = \frac{5 + \frac{3}{2}}{2} = \frac{6\frac{1}{2}}{2} = 3\frac{1}{4}$$

min

$$y = 2(3.25)^2 - 13(3.25) + 15 \\ = -6.125$$



2. Linear Inequations

$$(a) \quad 5x > 2x + 6$$

$$5x - 2x > 6$$

$$3x > 6$$

$$x > \frac{6}{3}$$

$$x > 2$$

$$\{x : x > 2\}$$

$$\{3, 4, 5, \dots\}$$

$$(c) \quad 14 + 3x < x - 6$$

$$3x - x < -6 - 14$$

$$2x < -20$$

$$x < \frac{-20}{2}$$

$$x < -10$$

$$\{x : x < -10\}$$

$$\{-11, -12, -13, \dots\}$$

$$(b) \quad 7x + 6 \geq 5x$$

$$7x - 5x \geq -6$$

$$2x \geq -6$$

$$x \geq \frac{-6}{2}$$

$$x \geq -3$$

$$\{x : x \geq -3\}$$

$$\{-3, -2, -1, \dots\}$$

$$2 \text{ (d) } 5x + 11 > 8x - 7$$

$$11 + 7 > 8x - 5x$$

$$18 > 3x$$

$$\frac{18}{3} > x$$

$$6 > x$$

$$\{x: x < 6\}$$

$$\{5, 4, 3, \dots\}$$

$$2 \text{ (e) } 3(x-1) < 2(4-x)$$

$$3x - 3 < 8 - 2x$$

$$3x + 2x < 8 + 3$$

$$5x < 11$$

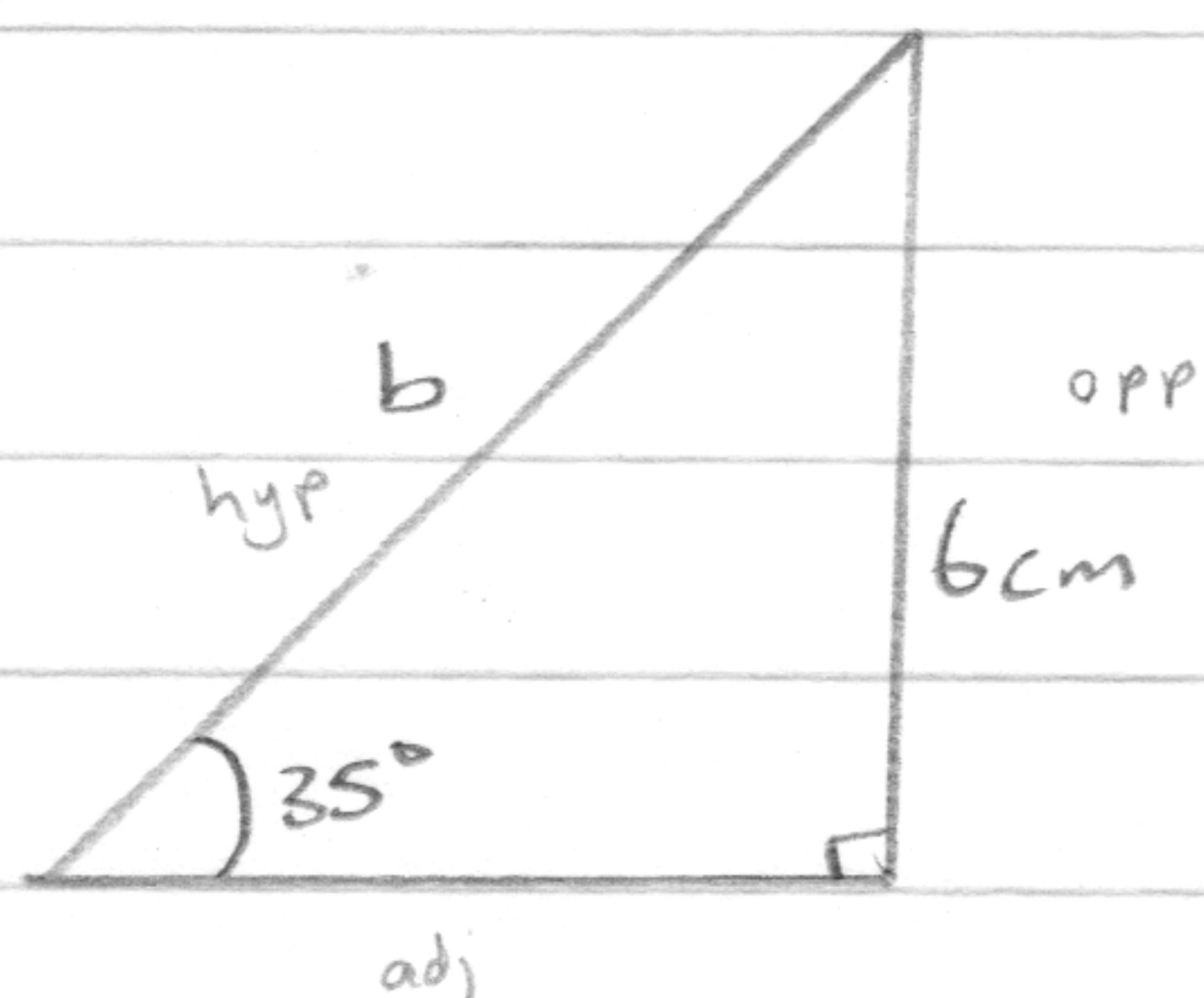
$$x < \frac{11}{5}$$

$$x < 2\frac{1}{5}$$

$$\{x: x < 2\frac{1}{5}\}$$

$$\{2, 1, 0, \dots\}$$

3.

Trigonometry.S^o H C^A H T^o A

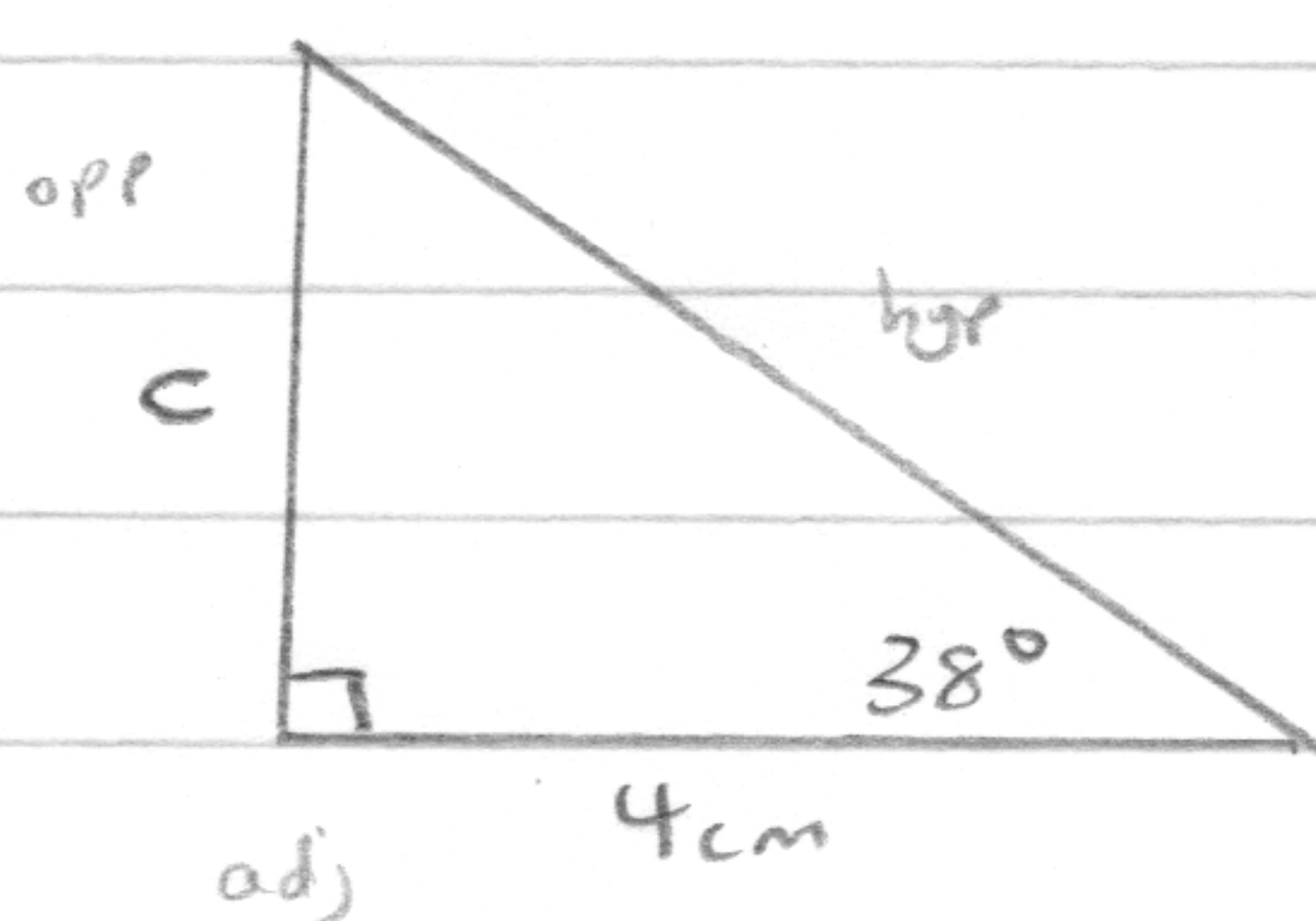
$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 35^\circ = \frac{6\text{cm}}{b}$$

$$b \sin 35^\circ = 6\text{cm}$$

$$b = \frac{6\text{cm}}{\sin 35^\circ}$$

$$b = \frac{6\text{cm}}{0.574} \Rightarrow \underline{b = 10.45\text{cm}}$$



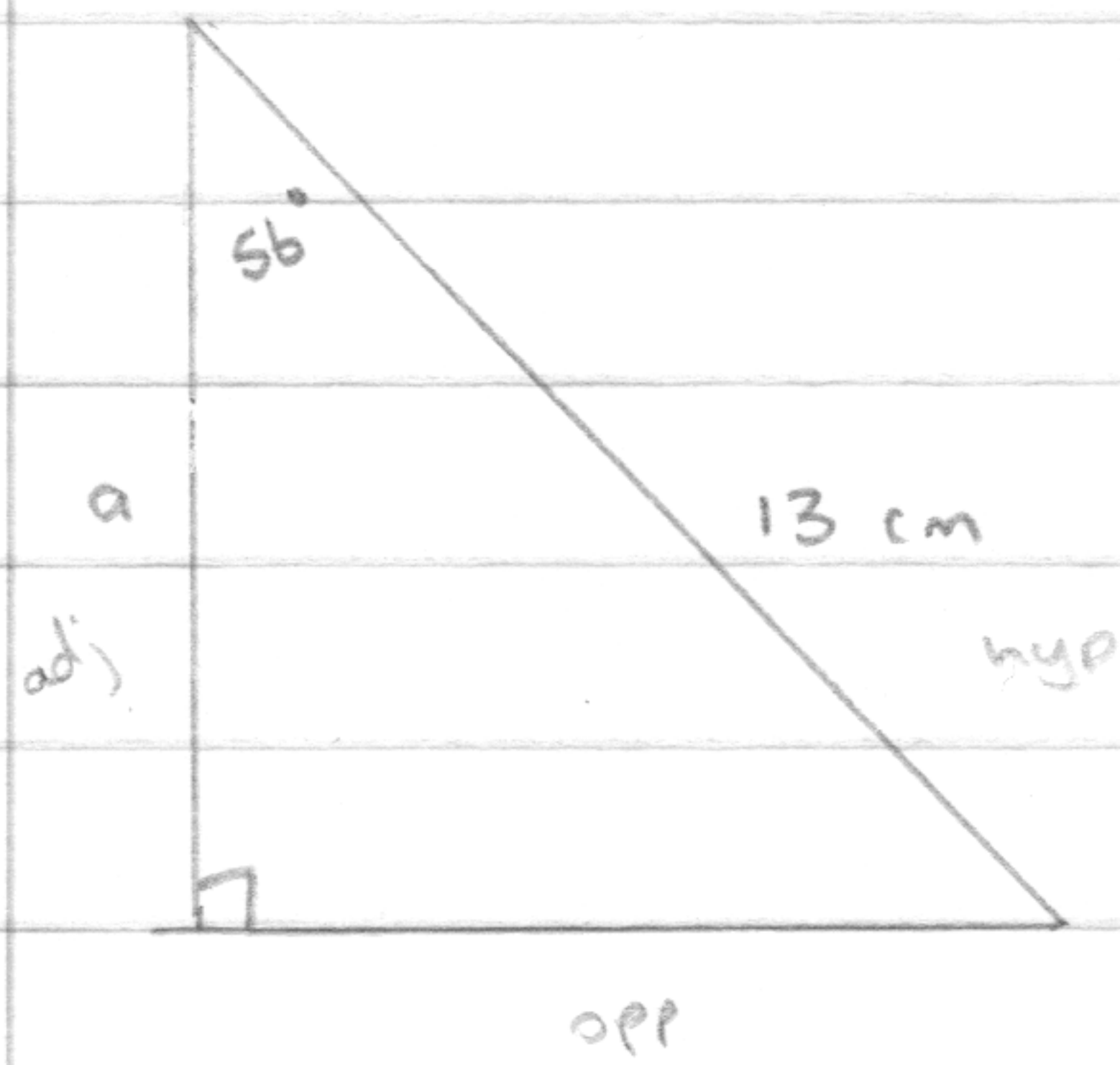
$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 38^\circ = \frac{c}{4\text{cm}}$$

$$4\text{cm} \times \tan 38^\circ = c$$

$$4\text{cm} \times 0.781 = c$$

$$\underline{3.124\text{cm} = c}$$



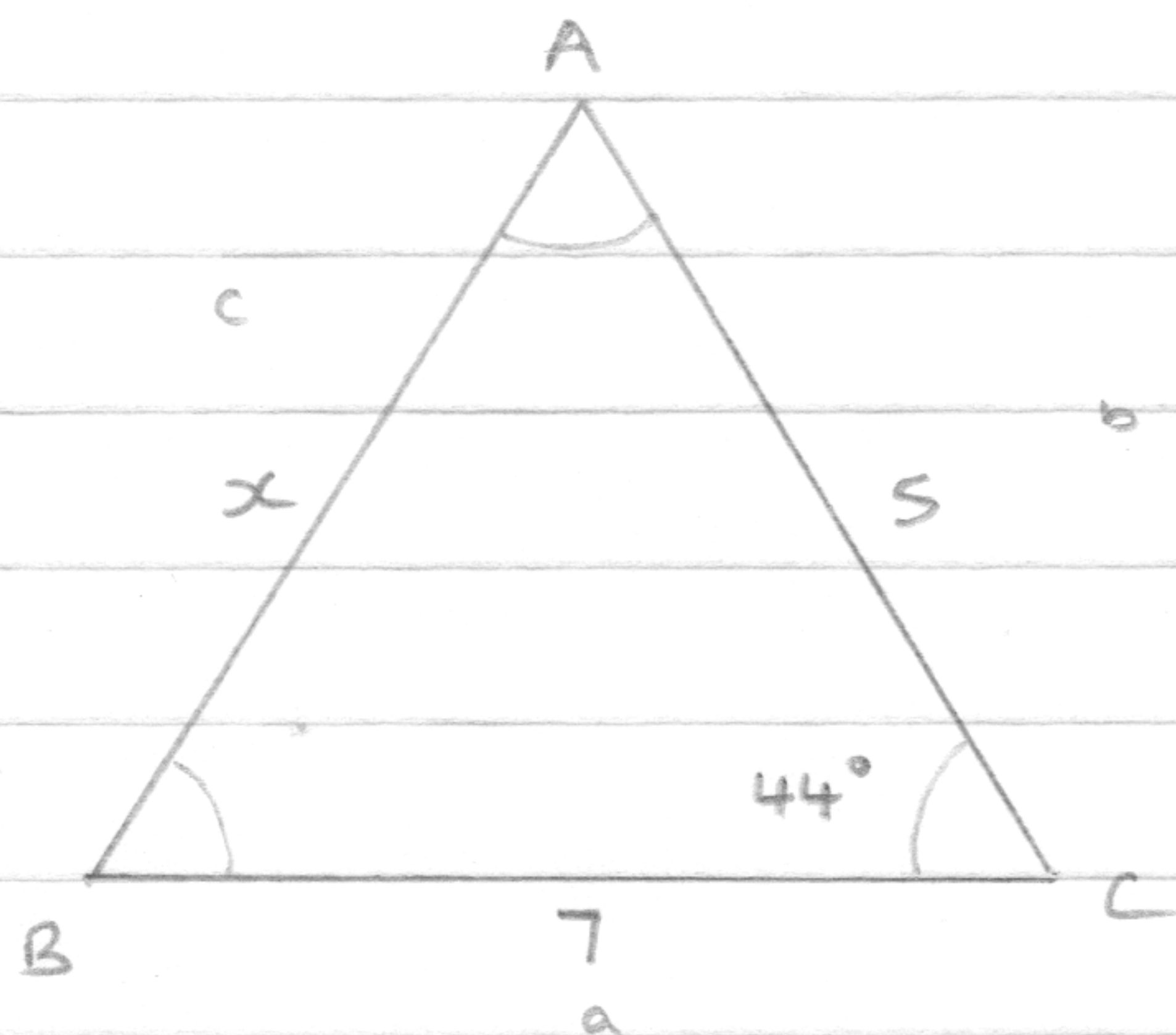
$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 56^\circ = \frac{a}{13 \text{ cm}}$$

$$13 \cos 56^\circ = a$$

$$13 \times 0.559 = a$$

$$\underline{7.267 \text{ cm} = a}$$



Cosine Rule

$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$x^2 = 7^2 + 5^2 - 2(7)(5) \cos 44^\circ$$

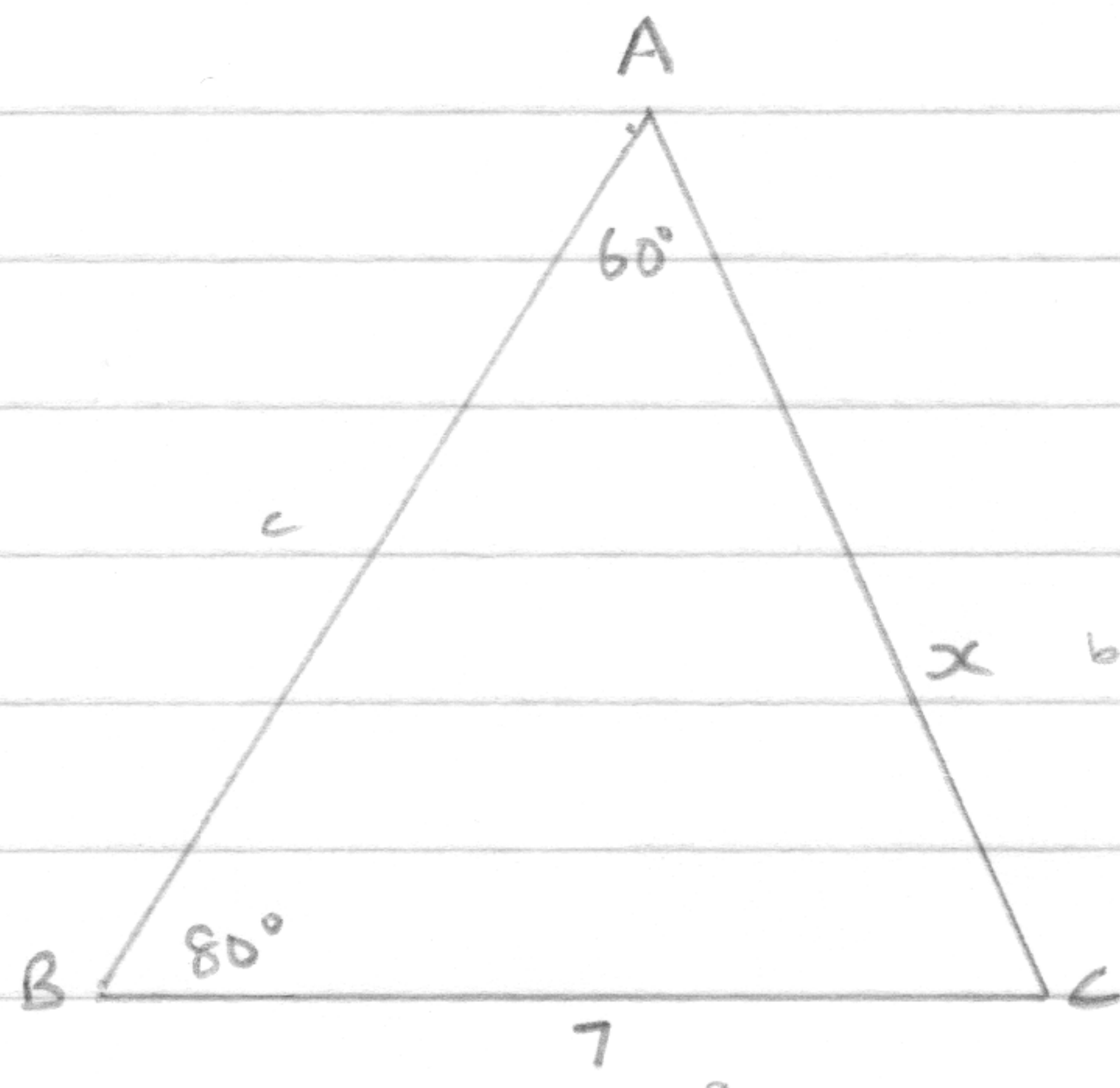
$$x^2 = 49 + 25 - \frac{70}{40} (0.719)$$

$$x^2 = 74 - 50.33$$

$$x^2 = 23.67$$

$$x = \sqrt{23.67}$$

$$\underline{x = 4.865}$$



Sine Rule.

$$\frac{a}{\sin A} = \frac{b}{\sin B}$$

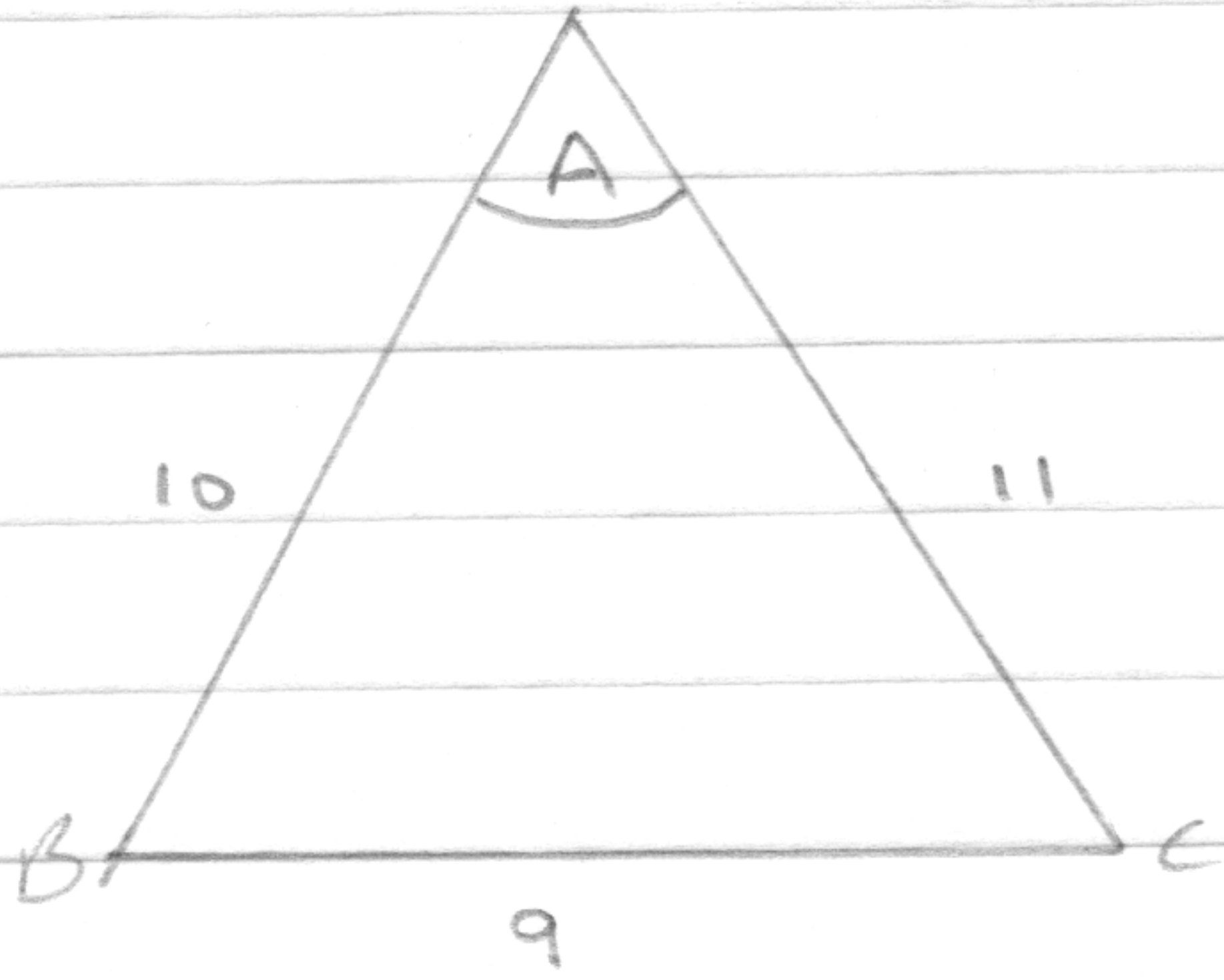
$$\frac{7}{\sin 60^\circ} = \frac{x}{\sin 80^\circ}$$

$$\frac{7}{0.866} = \frac{x}{0.984}$$

$$7 \times 0.984 = x \times 0.866$$

$$6.888 = 0.866x$$

$$\frac{6.888}{0.866} = x \rightarrow \underline{x = 7.954}$$



$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$9^2 = 11^2 + 10^2 - 2(11)(10) \cos A$$

$$81 = 121 + 100 - 210 \cos A$$

$$81 = 221 - 210 \cos A$$

$$81 + 210 \cos A = 221$$

$$210 \cos A = 221 - 81$$

$$210 \cos A = 141$$

$$\cos A = \frac{141}{210}$$

$$\cos A = 0.671$$

$$A = \cos^{-1}(0.671)$$

$$A = \underline{47.856^\circ}$$

NOTE

The other assigned questions were from your textbook (Vol. 1) therefore, you have access to the answers.

If you need the solution to any other question, please contact me.