

TB(1B) Ch. 9 Congruence and Similarity Conventional Questions

1. [11-12 Final Exam, Q10]

In **Figure 4**, ABD and ACE are straight lines, $\angle A = 40^\circ$, $\angle E = 60^\circ$, $\angle ABC = 80^\circ$ and $DE = 8$ cm.

- (a) Prove that $\triangle ABC \sim \triangle ADE$. (3 marks)
- (b) If $AC = 3CE$, find BC . (3 marks)

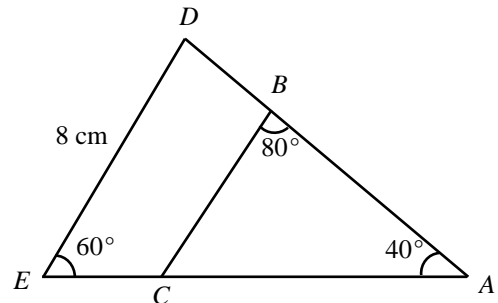


Figure 4

2. [12-13 Final Exam, Q5]

In **Figure 2**, it is given that $\triangle XYZ \sim \triangle QPR$. Find the values of a and b .

(4 marks)

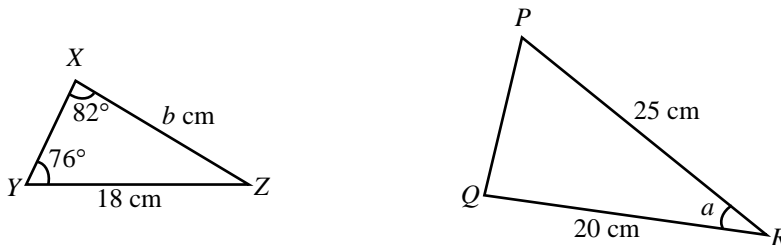


Figure 2

3. [12-13 Final Exam, Q12]

In **Figure 5**, $ABCD$ and $DEFG$ are squares. $DC \perp BE$, AE intersects CD at X and CG intersects DE at Y .

- (a) Prove that $\triangle ADE \cong \triangle CDG$. (3 marks)
- (b) (i) Prove that $\triangle ADX \sim \triangle ECX$. (2 marks)
- (ii) If $CX = 6$ cm and $CE = 15$ cm, find the area of $\triangle ADE$. (2 marks)

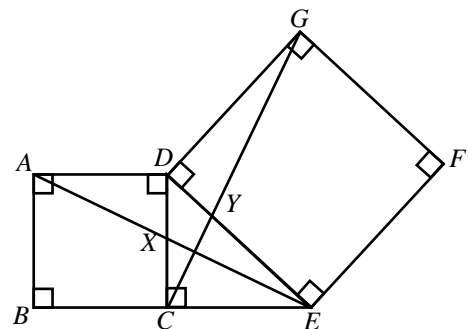


Figure 5

4. [13-14 Final Exam, Q2]

In Figure 2, $\angle Q = 55^\circ$, $\angle R = 67^\circ$, $\angle Y = 58^\circ$, $PQ = YX$

and $PR = YZ$. Prove that $\triangle PQR \cong \triangle YXZ$. (3 marks)

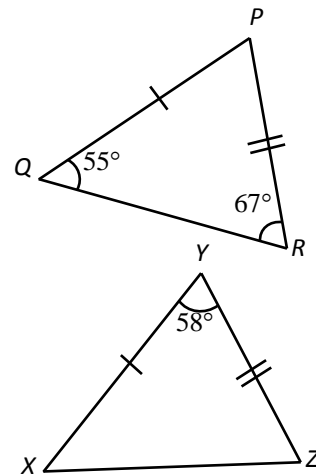


Figure 2

5. [13-14 Final Exam, Q8]

In Figure 4, $AB = 5$ cm, $BC = 1$ cm, $AE = 3$ cm and $ED = 7$ cm.

(a) Prove that $\triangle ABE \sim \triangle ADC$. (3 marks)

(b) If $BE = (x + 1)$ cm and $DC = (5x - 7)$ cm, find the length of BE .

(2 marks)

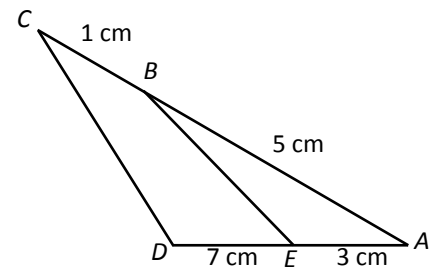


Figure 4

6. [14-15 Final Exam, Q4]

In Figure 1, it is given that $AB \parallel DC$, $\angle ADC = 40^\circ$, $\angle BAC = 65^\circ$ and $\angle ABC = 75^\circ$. $AB = 4$ cm and $AC = 6$ cm.

(a) Find $\angle DAC$ and $\angle ACD$.

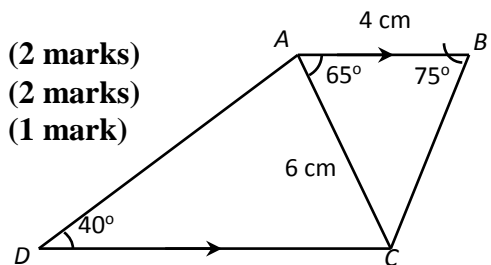
(b) Prove that $\triangle ADC \sim \triangle BCA$.

(c) Find the length of DC .

(2 marks)

(2 marks)

(1 mark)



7. [14-15 Final Exam, Q12]

In **Figure 6(a)**, $AOBC$ is a square. D is a point on AC and E is a point on CB produced such that $\angle DOE = 90^\circ$. Let $\angle AOD = a$.

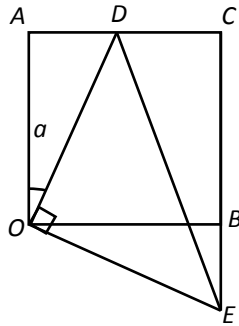


Figure 6(a)

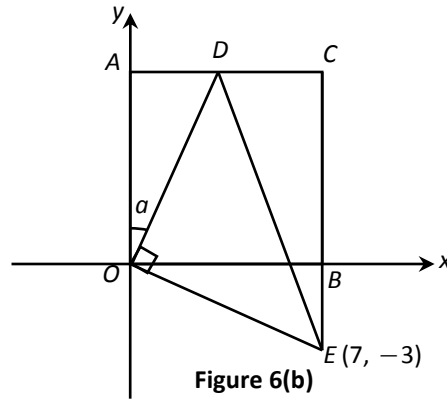


Figure 6(b)

- (a) Prove that $\triangle DAO \cong \triangle EBO$. (3 marks)
- (b) A rectangular coordinate system is introduced to **Figure 6(a)** such that O is the origin and the coordinates of E are $(7, -3)$ as shown in **Figure 6(b)**. Find the area of $\triangle DOE$.

(2 marks)

8. [15-16 Final Exam #9]

In **Figure 4**, $BCDE$ is a straight line, $\angle ABC = 54^\circ$, $\angle CAD = 36^\circ$ and $\angle ADF = 54^\circ$. It is known that $\angle ACD = \angle ADC$.

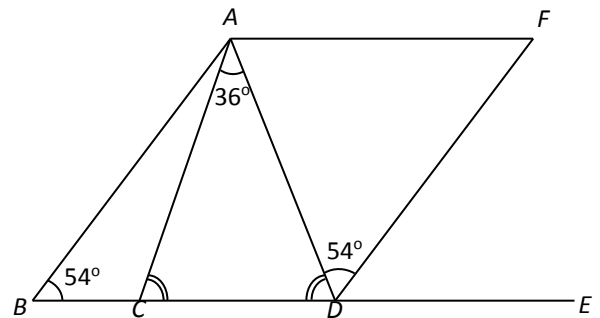


Figure 4

- (a) Find $\angle ADC$. (1 mark)
- (b) Prove that $AB \parallel FD$. (2 marks)
- (c) It is given that $AF \parallel BE$. Show that $\triangle ABD \cong \triangle DFA$. (2 marks)

9. [15-16 Final Exam #10]

In **Figure 5**, ABC , AMF , DEF and BME are straight lines. $AC \parallel DF$, $AB = 4$ cm, $BM = 3$ cm, $AM = 5$ cm, $MF = 10$ cm. It is given that $\angle DAF = 90^\circ$, $\angle BEF = 90^\circ$ and $\angle BAM = 37^\circ$

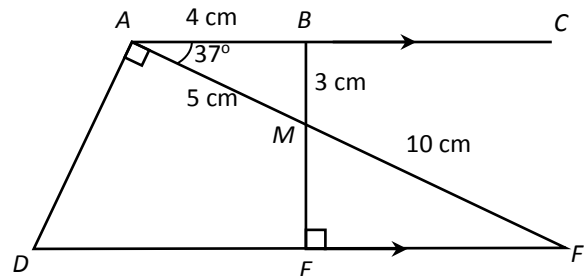


Figure 5

- (a) Prove that $\triangle ABM \sim \triangle FEM$. (2 marks)
- (b) Name another triangle which is similar to the two triangles in (a). (1 mark)
- (c) Find the length of DE . (3 marks)

~ End ~