

TB(2B) Ch. 10 Pyth. Thm & Irrational Numbers

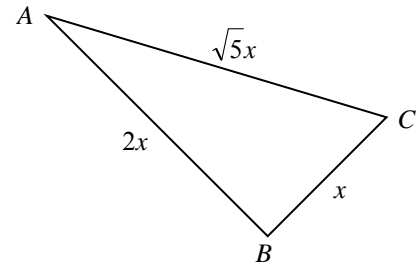
Pythagoras' Theorem

Conventional Questions

1. [11-12 S. Test 2]

In the figure, prove that $\triangle ABC$ is a right-angled triangle.

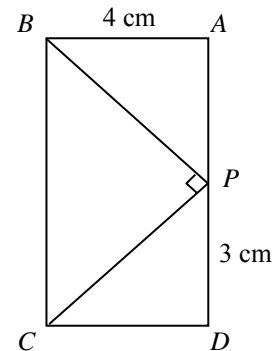
(3 marks)



2. [11-12 S. Test 2]

In the figure, $ABCD$ is a rectangle. P is a point on AD such that $BP \perp PC$. If $PD = 3$ cm and $AB = 4$ cm, find the length of BC .

(4 marks)



3. [12-13 S. Test 2]

In **Figure 2**, $AB = 4AC$, $BD = 10$ cm, $CD = 5\sqrt{21}$ cm, $\angle A = 90^\circ$ and the area of $\triangle ABC$ is 50 cm².

(a) Find the length of BC .

(4 marks)

(b) Prove that $\triangle BCD$ is a right-angled triangle.

(2 marks)

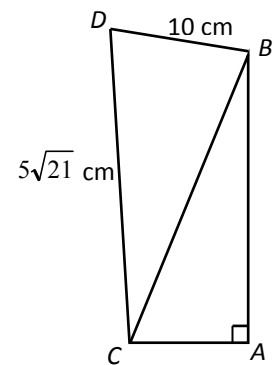


Figure 2

4. [12-13 Final Exam #7]

In **Figure 3**, $AB \parallel DE$, $AB = 2$, $BC = \sqrt{x^2 - 4}$, $CE = 3x$, $DE = 6$, ACE and BCD are straight lines.

(a) Prove that $\triangle ABC \sim \triangle EDC$. (3 marks)

(b) Peter claims that both $\triangle ABC$ and $\triangle EDC$ are right-angled triangles. Do you agree? Explain your answer. (3 marks)

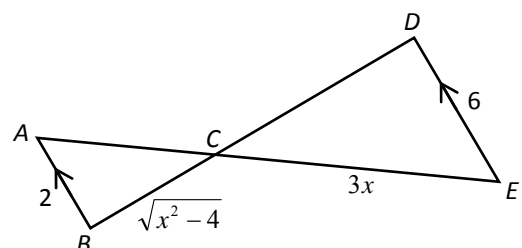


Figure 3

5. [13-14 St. Test #3]

In **Figure 2**, BCD is a straight line. $BC = \sqrt{3}$ cm, $AB = 3$ cm and $AC = 2\sqrt{3}$ cm.

- (a) Show that $\triangle ABC$ is a right-angled triangle. (2 marks)
- (b) If $AD = \sqrt{21}$ cm, find CD . (3 marks)

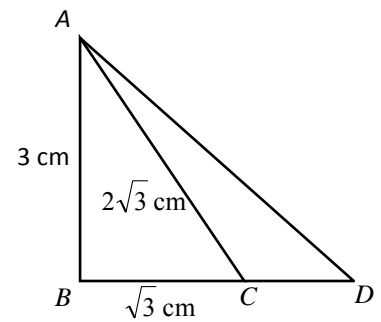


Figure 2

6. [13-14 Final Exam #10]

In **Figure 3**, D is a point lying on AC such that $\angle ACB = \angle ABD$.

- (a) Prove that $\triangle ABC \sim \triangle ADB$. (2 marks)
- (b) Suppose $AC = 25$ cm, $AB = 20$ cm and $BD = 12$ cm. Prove that $\triangle ABD$ is a right-angled triangle. (3 marks)

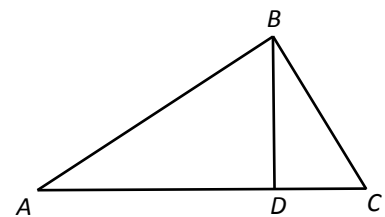


Figure 3

7. [14-15 St. Test #2]

In **Figure 1**, $AC = CB$, $\angle ADC = 90^\circ$, $CD = 7$ cm and $AD = 24$ cm. Find the length of AB .

(3 marks)

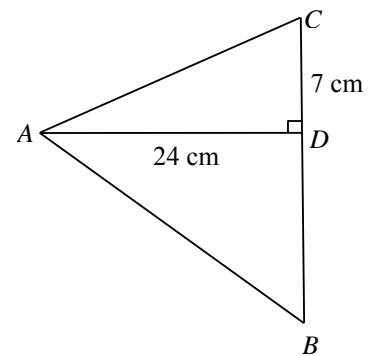


Figure 1

8. [14-15 St. Test #5]

In $\triangle ABC$, $AB = 2\sqrt{x}$ cm, $BC = \sqrt{x^2 + 4}$ cm and $AC = (x + 2)$ cm, where $x > 0$. Is $\triangle ABC$ a right-angled triangle? Explain your answer. (3 marks)

9. [14-15 S.6 Mock Exam #7]

In Figure 1, $ABCD$ is a rectangle. E is a point on AB such that $DE = CD$. CF is the altitude of $\triangle CDE$.

(a) Prove that $\triangle CEF \cong \triangle CEB$.

(b) If $CD = 10$ cm and $BE = 2$ cm, find the area of $\triangle CDE$.

(6 marks)

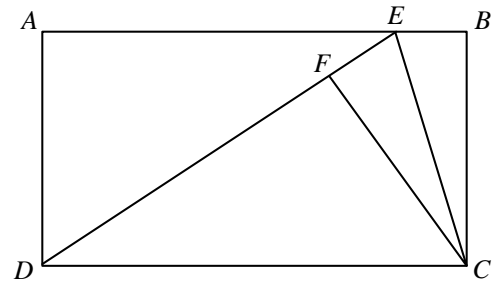


Figure 1

10. [14-15 S.6 Mock Exam #8]

In a polar coordinate system, O is the pole. The polar coordinates of the points P and Q are $(8, 80^\circ)$ and $(k, 350^\circ)$ respectively, where $k > 0$. It is given that $OP : PQ = 4 : 5$.

(a) Is $\triangle OPQ$ a right-angled triangle? Explain your answer.

(b) Find the perimeter of $\triangle OPQ$.

(4 marks)

11. [14-15 Final #11]

In Figure 3, $BC : AB = 2 : 1$, $AC = 10$ and $BC = x$.

(a) Find x . (2 marks)

(b) Find BD . (2 marks)

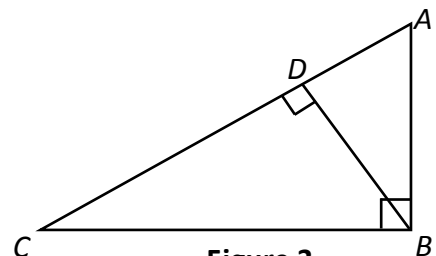


Figure 3

12. [15-16 Final #10]

In Figure 3, $\angle ACB = \angle AED = 90^\circ$, $AC = 3$ cm, $BC = 4$ cm and $AE = 1.5$ cm.

(a) Prove that $\triangle ABC \sim \triangle ADE$. (2 marks)

(b) Hence, find the area of $\triangle ABD$. (3 marks)

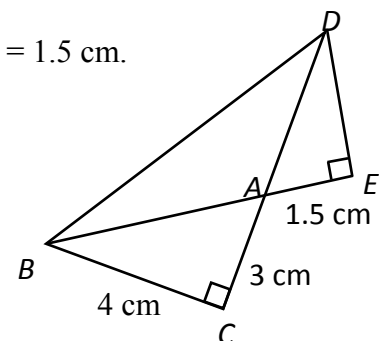
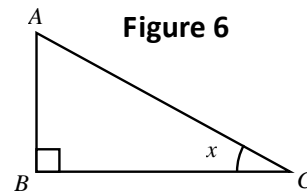


Figure 3

13. [15-16 Final #14]

In **Figure 6**, $\triangle ABC$ is a right-angled triangle. Prove that $\sin^2 x + \cos^2 x = 1$. (2 marks)



14. [15-16 St. Test #4]

A ship leaves a pier and sails east for 2 hours, then it sails south to a lighthouse for 3 hours. It is given that the speed of the ship is 50 km/h throughout the journey. Find the shortest distance between the pier and the lighthouse. (2 marks)

15. [15-16 St. Test #8]

In **Figure 2**, It is given that $AEDBC$ is a trapezium. $AB = 8$, $AC = 10$, $BC = 6$ and $\angle EDC = 90^\circ$.

(a) Prove $\triangle ABC$ is a right angled triangle. (2 marks)

(b) If area of trapezium $AEDBC$: area of $\triangle AEC = 8 : 3$, find EC . (2 marks)

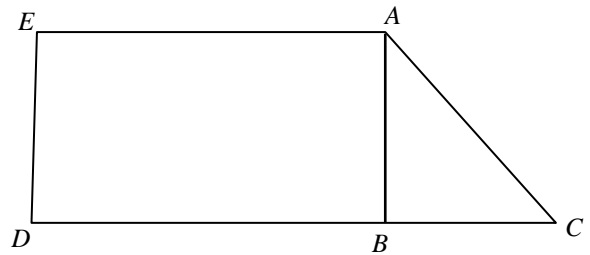


Figure 2

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