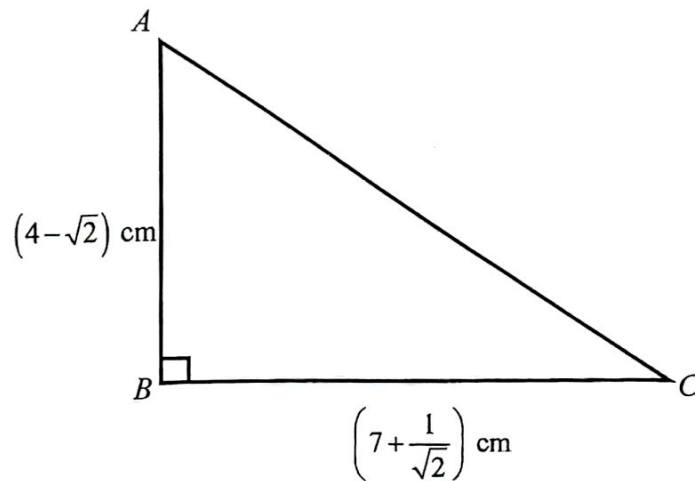


- 1 (a) Solve $\sqrt{3x+22} = x+4$. [3]
- (b) Express $\frac{5+\sqrt{3}}{3-\sqrt{3}} - \frac{\sqrt{300}}{3} + \sqrt{192}$ in the form $a+b\sqrt{3}$, where a and b are integers. [4]
- 2 (a) By using an appropriate substitution or otherwise, solve $7^{4x+2} - 3(49^{2x}) = 322$. [3]
- (b) Simplify $\frac{\sqrt[n]{a^{n+4}}}{\sqrt[n]{a^4}}$, where $a > 0$ and n is a positive integer. [2]
- 3 In the triangle ABC , $AB = (4-\sqrt{2})$ cm, $BC = (7+\frac{1}{\sqrt{2}})$ cm, and angle $ABC = 90^\circ$.
Find an expression for $(AC)^2$ in the form $(a+b\sqrt{2})$ cm², where a and b are rational numbers. [3]



- 4 The equation of a curve is $y = -2x^2 + 13x - 11$.
- (a) Express $-2x^2 + 13x - 11$ in the form $a(x-h)^2 + k$, where a , h and k are constants. Hence, find the coordinates of the turning point on the curve. [3]
- (b) Sketch the graph of $y = -2x^2 + 13x - 11$, indicating clearly the turning point, the y -intercept and x -intercepts of the curve. [3]

- 5 (a) The line $y = 10x + 1$ intersects the curve $y = 2x^2 - 12x - 23$ at two points.
Find the y -coordinates of these two points. [3]
- (b) Find value of the constant k for which the line $y = 3k - 2x$ just touches the
curve $y = 2x^2 - 12x - 23$. [3]
- 6 Find the range of values of x for which $(3 - x)^2 > 4x$. [3]

End of Paper