Bilkent University

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Q-1)

The sides of the triangle on the right are changing as differentiable functions of time. At a particular time, say at $t = t_0$, we observe that $b(t_0) = 8$cm, $c(t_0) = 5$cm and $\theta(t_0) = \pi/3$. We also observe that at that moment side a is increasing at a rate of 2cm/s, side b is increasing at a rate of 1cm/s and side c is decreasing at a rate of 1cm/s. Find how fast θ is changing at that moment.
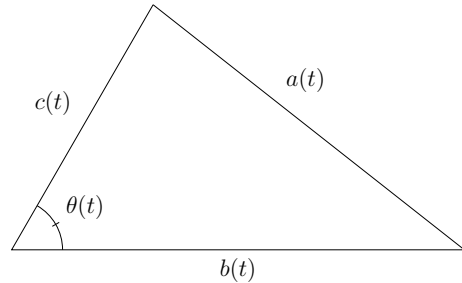
Hint: You may find it useful to recall the cosine rule $a^2 = b^2 + c^2 - 2bc \cos \theta$.

Grading: 10 points

Answers: