Calculus1

Exam Review Day

Minseo Cho

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Question (15min)

Problem

Water pours into a hemispherical tank with a radius of 3 cm at a rate that increases the water height by 2 cm per second. When the water level is h cm, the volume of the hemisphere tank is given by $V = \pi(3h^2 - \frac{1}{3}h^3)$.

1. When $h = 1$, how fast does the water volume change?
2. When $h = 1$, compute $\frac{dx}{dt}$ using the following figure.