

MM: 20 **Class Test XII A** Time: 30 min

Each Question Carries 5 marks

Q1. The surface area of a spherical bubble is increasing at the rate of $2\text{ cm}^2/\text{sec}$. Find the rate at which the volume of the bubble is increasing at the instant its radius is 6 cm.

Q2. Prove that $y = \frac{4\sin\theta}{(2+\cos\theta)} - \theta$ is an increasing function of θ in $\left[0, \frac{\pi}{2}\right]$.

Q3. Find the equation of the tangent to the curve $y = \sqrt{3x-2}$ which is parallel to the $4x-2y+5=0$.

Q4. Using differentials, find the approximate value of $(81.5)^{1/4}$.

Note: 1. Solution key / marks will be available at my blog:

www.amitbajajmaths.blogspot.com

2. Next test scheduled on 23 Aug 2011 (Ex 6.5 + Misc)

MM: 20 **Class Test XII B** Time: 30 min

Each Question Carries 5 marks

Q1. The volume of spherical balloon is increasing at the rate of $25\text{ cm}^3/\text{sec}$. Find the rate of change of its surface area at the instant when its radius is 5 cm.

Q2. Show that $y = \log(x+1) - \frac{2x}{2+x}$; $x > -1$ is an increasing function of x throughout its domain.

Q3. Find the equation of the tangent line to the curve $y = x^2 - 2x + 7$ which is perpendicular to the line $5y - 15x = 13$.

Q4. Using differentials, find the approximate value of $(15)^{1/4}$.

Note: 1. Solution key / marks will be available at my blog:

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2. Next test scheduled on 23 Aug 2011 (Ex 6.5 + Misc)

MM: 20 **Class Test XII C** Time: 30 min

Each Question Carries 5 marks

Q1. Sand is pouring from a pipe at the rate of $12\text{ cm}^3/\text{s}$. The falling sand forms a cone on the ground in such a way that the height of the cone is always one-sixth of the radius of the base. How fast is the height of the sand cone increasing when the height is 4 cm?

Q2. Find intervals on which $f(x) = 5 + 36x + 3x^2 - 2x^3$ is (i) increasing (ii) decreasing:

Q3. Find the equation of the normals to the curve $y = x^3 + 2x + 6$ which are parallel to the line $x + 14y + 4 = 0$.

Q4. Using differentials, find the approximate value of $(29)^{1/3}$.

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2. Next test scheduled on 23 Aug 2011 (Ex 6.5 + Misc)