Q.No.	DAY - 56
347	**Example 8.1** Find the linear approximation for $f(x)=\sqrt{1+x}, x \geq -1$, at $x_0 = 3$. Use the linear approximation to estimate $f(3.2)$
348	**Example 8.3** Let us assume that the shape of a soap bubble is a sphere. Use linear approximation to approximate the increase in the surface area of a soap bubble as its radius increases from 5 cm to 5.2 cm. Also, calculate the percentage error.
349	**EXERCISE 8.1** 2. Use the linear approximation to find approximate values of (i) $(123)^{\frac{2}{3}}$ (ii) $\sqrt[4]{15}$
350	3. Find a linear approximation for the following functions at the indicated points. (ii) $g(x)=\sqrt{x^2+9}$, $x_0=-4$ (iii) $h(x)=\frac{x}{x+1}$, $x_0=1$
351	6. The time T, taken for a complete oscillation of a single pendulum with length l, is given by the equation $T=2\pi\sqrt{\frac{l}{g}}$, where g is a constant. Find the approximate percentage error in the calculated value of T corresponding to an error of 2 percent in the value of l.
352	7. Show that the percentage error in the n^{th} root of a number is approximately $\frac{1}{n}$ times the percentage error in the number