

Final Review 3 – Word Problems

1. Find the dimensions of the rectangle of largest area that has its base on the x -axis and its other two vertices above the x -axis and lying on the parabola $y = 8 - x^2$.
2. A paper cup has the shape of a inverted cone with height 10 cm and radius 3 cm (at the top). If the water level is rising at a rate of 0.2 cm/sec when the water level is 5 cm and at the same time water is leaking out at a rate of $1 \text{ cm}^3/\text{sec}$, find the rate at which water is being poured into the cup.
3. Find the dimension of the right circular cylinder of maximum volume which can be inscribed in a sphere of radius 12 inches.
4. Use linear approximation to estimate $(0.97)^{1/3}$.