

Steps for Related Rates Problems:

I Introduction

- Read the problem carefully.
- Draw a picture (sketch), if possible.
- Introduce notation. Assign symbols to all quantities that are functions of time.

II Known Derivative

Express the given rates in terms of derivatives.

III Unknown Derivative

Express the unknown rates in terms of derivatives.

IV Equation

Write an equation that relates the various quantities of the problem that are functions of time. If necessary, use geometry of the situation to eliminate one of the variables by substitution.

V Differential Equation

Use the Chain Rule to differentiate both sides of the equation with respect to t , also known as implicit differentiation, to find a differential equation.

VI Snap Shot

Substitute the given information into the resulting equation and solve for the unknown derivative.

VII Conclusion

State your conclusion to the problem.