

MATH 253 – WORKSHEET 11
LINEAR APPROXIMATION

Use a linear approximation to estimate

(1) e^{x-y} at $(0.1, 0.1)$.

(2) The area of a triangle two of whose sides are 9.9cm and 10.1cm long and meet at an angle of 31° .

(3) An equilateral triangle has sides of length 10cm (to within 1mm) and the angle between those sides is 150° (to within 1°). What is the area of the triangle? Estimate the maximum error in your calculation.

- (4) Two planes tangent to the surface $z = 1 - x^2 - y^2$ meet the x -axis at $\frac{21}{16}$ and the y -axis at $\frac{21}{8}$. What are they? Where are the points of tangency?