Rates of Change

**1.** Let http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bf%28x%29%2520%253D%2520e%255E%257Bx%257D%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bf%28x%29%2520%253D%2520e%255E%257Bx%257D%257D%255Cend%257Bdisplaymath%257Dwhere http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Be%2520%253D2.71%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Be%2520%253D2.71%257D%255Cend%257Bdisplaymath%257D. Tabulate the change of http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bf%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bf%257D%255Cend%257Bdisplaymath%257Dover the intervals(i) http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C2%255D%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C2%255D%257D%255Cend%257Bdisplaymath%257D,      (ii)http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C1%255D%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C1%255D%257D%255Cend%257Bdisplaymath%257D,      (iii)http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C.5%255D%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C.5%255D%257D%255Cend%257Bdisplaymath%257D,      (iv) http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C0.25%255D%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C0.25%255D%257D%255Cend%257Bdisplaymath%257D,      (v)http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C0.1%255D%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257B%255B0%252C0.1%255D%257D%255Cend%257Bdisplaymath%257D.

Estimate the instantaneous rate of change of http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bf%28x%29%253De%255E%257Bx%257D%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bf%28x%29%253De%255E%257Bx%257D%257D%255Cend%257Bdisplaymath%257Dat http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bx%253D0%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bx%253D0%257D%255Cend%257Bdisplaymath%257D.

**2.** Use the limit definition of rate of change to calculate how quickly http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bf%28x%29%253Dx%255E%257B2%257D%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bf%28x%29%253Dx%255E%257B2%257D%257D%255Cend%257Bdisplaymath%257Dis changing at http://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bx%253D-4%257D%255Cend%257Bdisplaymath%257Dhttp://calculus.sfsu.edu/latexrender/latex2image.php?data=%255Cbegin%257Bdisplaymath%257D%2520%255Ctextstyle%257Bx%253D-4%257D%255Cend%257Bdisplaymath%257D.