

Name: _____

This quiz covers: 3.9, 4.1 and 4.2.

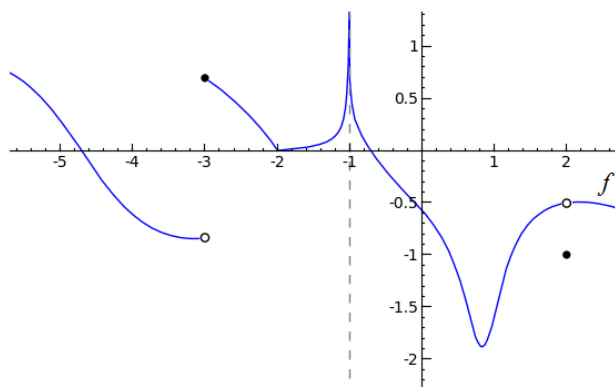
Directions: Complete all questions and **show all applicable work.** Partial credit will be given. All questions are equally weighted.

1.) (A) Create a linear approximation to the function $y = 2\sqrt{x}$ at the point $x = 1$. (B) What domain of x provides a error of less than 0.1?

2.) A spherical balloon is being filled by air at a rate of 3 milliliters per second. How fast is the radius of the balloon increasing when the balloon has 15 milliliters of air in it? (hint: $V = 4\pi r^2$)

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3.)



(A) Using the graph above, list all critical points (including end points) on the domain $[-3, 2]$. (B) What is the absolute maximum and minimum?