

# Tangent Line Project

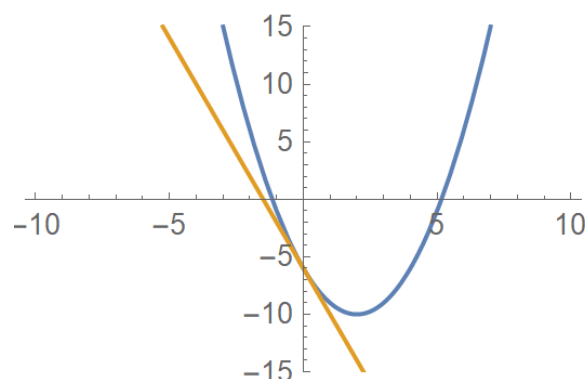
For this project you will estimate the tangent line for three different functions. Watch the non-live video posted titled “Tangent Line Project video”.

**1)** The function  $f(x) = x^2 - 4x - 6$  is drawn below with a tangent line. Find the equation of the tangent line using the following procedures. Intersection occurs when  $x = 0$ .

**a)** First estimate the slope at the intersection by evaluating the slope of a short secant line use  $h = 0.01$

**b)** Use the slope from part a) to find the equation of the tangent line.

**c)** Enter the expression for your tangent line into the Mathematica file “Project II Submission” to verify your work.

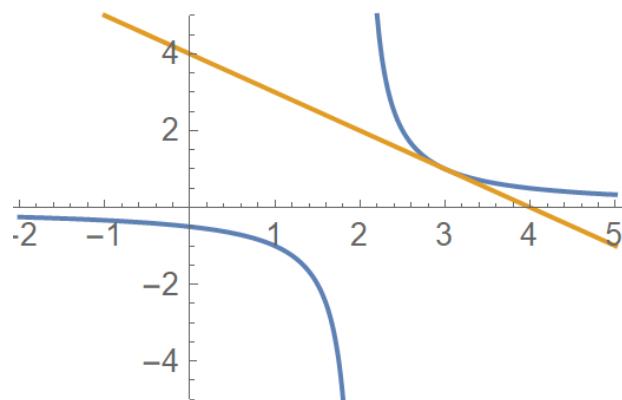


**2)** The function  $g(x) = \frac{1}{x-2}$  is drawn below with a tangent line. Find the equation of the tangent line using the following procedures. Intersection is at  $x = 3$ .

**a)** First estimate the slope at the intersection by evaluating the slope of a short secant line use  $h = 0.01$

**b)** Use the slope from part a) to find the equation of the tangent line.

**c)** Enter the expression for your tangent line into the Mathematica file “Project II Submission” to verify your work.



**3)** The function  $h(x) = \sqrt{x-2}$  is drawn below with a tangent line. Find the equation of the tangent line using the following procedures. Intersection is at  $x = 3$ .

**a)** First estimate the slope at the intersection by evaluating the slope of a short secant line use  $h = 0.01$

**b)** Use the slope from part a) to find the equation of the tangent line.

**c)** Enter the expression for your tangent line into the Mathematica file “Project II Submission” to verify your work.

