**C12 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**/12**

**Tangents, Normals, and Rates of Change Test**

**[3] 1.** Find the average rate of change of $f(x)=\frac{2}{x+5}$ over the interval $[-4,-1]$.

**[3] 2.** Find the instantaneous rate of change of $f(x)=-\frac{1}{x-4}$ at $x=6.$

**[3] 3.** Determine the equation of a tangent line to $f(x)=\sqrt{x+7} $at $x=-6. $Write the equation of this tangent line in slope-intercept form. **Sketch a graph of f(x) and the tangent with three exact points for each.**

**[3] 4.** Determine the equation of a normal line to $f(x)=x^{2}-5 $at $x=-2. $Write the equation of this normal line in slope-intercept form. **Sketch a graph of f(x) and the normal with three exact points for each.**