Name (Last, First)_____

1. Find the limit
$$\lim_{x \to -5} \frac{x^2 + 3x - 10}{x + 5}$$

$\lim_{x \to -5} \frac{x^2 + 3x - 10}{x+5}$

$\lim_{x \to -5} \frac{(x+5)(x-2)}{x+5}$

$\lim_{x \to -5}(x - 2) = -5 - 2 = -7$

2. Find the slope of the curve at the given point P.
$$y = x^2 - 2x - 3, \quad P(2, -3)$$

$f(2) = 2^2 - 2 \cdot 2 - 3 = -3$

$f(2 + h) = (2 + h)^2 - 2(2 + h) - 3 = 2^2 + 2 \cdot 2 \cdot h + h^2 - 4 - 2h - 3 = 2h + h^2 - 3$

$$
\begin{aligned}
\frac{f(2 + h) - f(2)}{h} &= \frac{2h + h^2 - 3 - (-3)}{h} \\
&= \frac{2h + h^2}{h} \\
&= 2 + h
\end{aligned}
$$

Now $\lim_{h \to 0} 2 + h = 2$. Therefore slope of the curve at that given point is 2.