Limits at ∞, Derivatives

1. Find
$$\lim_{x\to\infty} \frac{x^2+x+5}{3x^2+x+2}$$

2. Find the slope of the tangent line to $f(x) = x^2/6$ at $a = 2$.

3. Find of the derivative of $f(x) = \sqrt{x+2}$ at $a = 3$.

4. Write down the equation for the slope of the tangent line to $f(x) = \sin(x)$ at $a = \pi$, but do not evaluate the limit.

5. Find
$$\lim_{x\to\infty} \sqrt{x^2+1} - x$$