Worksheet 1: Limits

1. $\lim_{x\to 2}(3x^4 - 2x^2 + x - 1)$

2. $\lim_{x\to 4}\sqrt{16 - x^2}=$

3. $\lim\limits_{x\to 4}\dfrac{x^2 - 4x}{x^2 - 3x - 4}=$

4. $\lim\limits_{x\to 1}\dfrac{x^3 - 1}{x^2 - 1}=$

5. $\lim_{x \to -4} \dfrac{\sqrt{x^2+9}-5}{x+4} =$

6. $\lim_{h \to 0} \dfrac{(h-1)^3+1}{h} =$

7. Find $\lim_{h \to 0} \dfrac{f(a+h)-f(a)}{h}$ for $f(x) = x^2$ with $a = 2$.

8. Find $\lim_{x \to a} \dfrac{f(x)-f(a)}{x-a}$ for $f(x) = \sqrt{3x+1}$ with $a = 3$.