

Math 114 Fall 2019
Calculus I HW 3
Due Wednesday, September 18

1. Compute $\lim_{x \rightarrow 1} \frac{x^2 + 3}{x - 1}$.
2. Compute $\lim_{x \rightarrow -3} \frac{x - 4}{(x + 3)^2}$.
3. Stewart 1.6.16
4. Stewart 1.6.18
5. Stewart 1.6.20
6. Stewart 1.6.22
7. Stewart 1.6.24
8. (★) Stewart 1.6.28
9. Compute $\lim_{x \rightarrow -\infty} \frac{x^3 + 1}{\sqrt{x^6 + x^4 + 1}}$.
10. Compute $\lim_{x \rightarrow +\infty} x^2 - x$.
11. Compute $\lim_{x \rightarrow +\infty} 2x - \sqrt{4x^2 + 3x + 1}$.
12. If $f(x) = \sqrt[3]{x}$, then it is a fact that $f'(27) = \frac{1}{27}$. Use linear approximation to estimate $\sqrt[3]{25}$ and $\sqrt[3]{30}$.
13. If $g(x) = x^2$, then it is a fact that $g'(3) = 6$. Use linear approximation to estimate 2.8^2 and 3.2^2 .
(Also: you don't need to submit this answer, but think about how your approximations relate to $g(3)$, and why any symmetries you notice are there.)