

Evaluating limits when $x \rightarrow a$.

1. Show $\lim_{x \rightarrow 1} (6x^2 - 4x + 3) = 5$.
2. Show $\lim_{x \rightarrow 7} \frac{x^2 - 49}{x - 7} = 14$.
3. Show $\lim_{x \rightarrow 2} \frac{x^2 - 6x + 8}{x - 2} = -2$.
4. Show $\lim_{x \rightarrow 5} \frac{2x^2 + 9x - 5}{x + 5} = -11$.
5. Show $\lim_{x \rightarrow 1} \frac{x^3 - 1}{x - 1} = 3$.
6. Show $\lim_{x \rightarrow 3} \frac{x^2 - 4x + 3}{x^2 - 2x - 3} = 1/2$.
7. Show $\lim_{x \rightarrow -2} \frac{x^3 + 8}{x + 2} = 4$.
8. Show $\lim_{x \rightarrow 3} \frac{x^4 - 81}{x - 3} = 108$.
9. Show $\lim_{x \rightarrow 5} \frac{x^5 - 3125}{x - 5} = 3125$.
10. Show $\lim_{x \rightarrow a} \frac{x^{12} - a^{12}}{x - a} = 12a^{11}$.
11. Show $\lim_{x \rightarrow a} \frac{x^{5/2} - a^{5/2}}{x - a} = (5/2)a^{3/2}$.
12. Show $\lim_{x \rightarrow a} \frac{(x + 2)^{5/3} - (a + 2)^{5/3}}{x - a} = (5/3)(a + 2)^{2/3}$.
13. Show $\lim_{x \rightarrow 4} \frac{x^3 - 64}{x^2 - 16} = 6$.
14. Show $\lim_{x \rightarrow 2} \frac{x^5 - 32}{x^3 - 8} = 20/3$.
15. Show $\lim_{x \rightarrow 1} \frac{x^n - 1}{x - 1} = n$.
16. Show $\lim_{x \rightarrow a} \frac{\sqrt{x} - \sqrt{a}}{x - a} = \frac{1}{2\sqrt{a}}$.
17. Show $\lim_{x \rightarrow 2} \frac{\sqrt{3 - x} - 1}{2 - x} = 1/2$.
18. Show $\lim_{x \rightarrow a} \frac{\sqrt{a + 2x} - \sqrt{3x}}{\sqrt{3a + x} - 2\sqrt{x}} = \frac{2\sqrt{3}}{9}$.
19. Show $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a} = na^{n-1}$.