

Math History for Precalculus

Karl Weierstrass

1. When did Karl Weierstrass (VIE er shtrahs) live?
2. Where was he from?
3. What was his religious background?
4. In which sport did he excel?
5. What kind of work did he do until his mathematical research received recognition?

His early paper “Contributions to the Theory of Abelian Integrals” appeared in a high-school publication for 1848–1849 and went unnoticed.

6. How and when was the paper on Abelian functions that brought him recognition published?
7. What prompt response did the paper produce?
8. Which of Weierstrass’s colleagues criticized his work mercilessly? How did Weierstrass respond?
9. Weierstrass and another man share the honor for a theorem on limit points of infinite sets. Who is the other man, and when did he live?

Weierstrass proved the central role of polynomials in the theory of functions. The Weierstrass approximation theorem shows that every continuous function on a closed interval $[a, b]$ can be approximated to any given level of accuracy by some polynomial. Later, he also gave the first example of a continuous function that never has a tangent line at any point of its graph.

10. His careful analysis of functions brought a systematic, rigorous development to calculus. Because of his work, he is rightfully called the Father of what?