childsmath

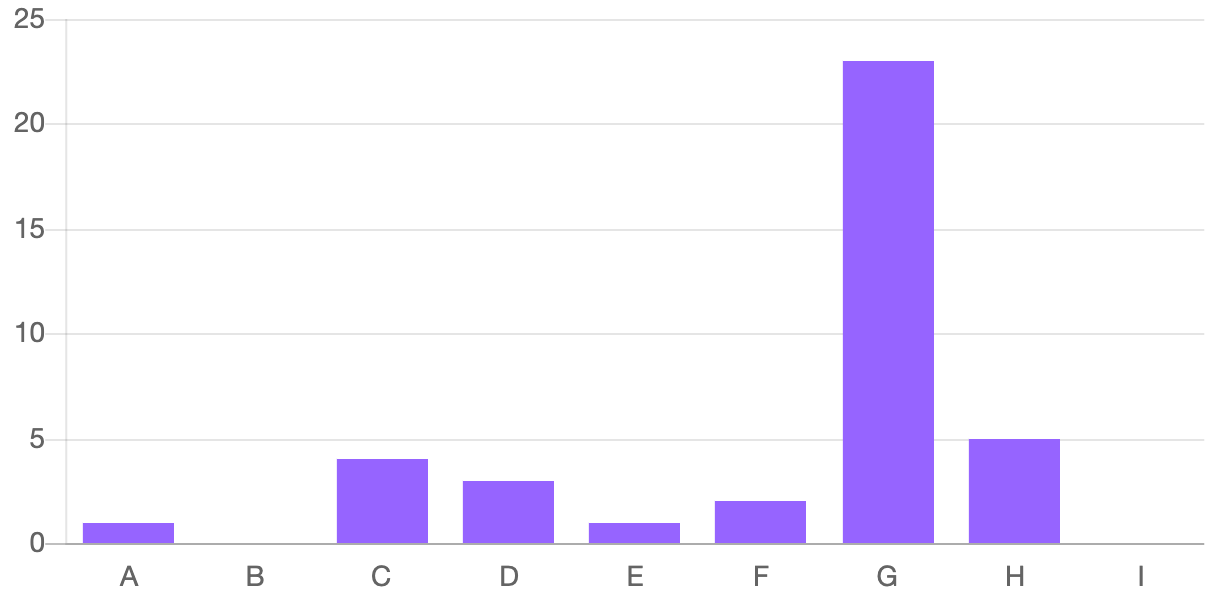
$$\int_M d\omega = \int_{\partial M} \omega$$

Math 3A03
Poll Results

earn

Derivatives: Chain Rule

Question #1 Can the chain rule be proved by exploiting the following equation?

$$\frac{g(f(x)) - g(f(x_0))}{x - x_0} = \frac{g(f(x)) - g(f(x_0))}{f(x) - f(x_0)} \cdot \frac{f(x) - f(x_0)}{x - x_0} \qquad (\spadesuit)$$

(A) No, $(\spadesuit)$ is nonsense of $f \equiv 0$
(B) No, $(\spadesuit)$ is nonsense if f is any constant function
(C) No, $(\spadesuit)$ is nonsense if $f(x) = f(x_0)$ for any $x \neq x_0$
(D) No, $(\spadesuit)$ is nonsense if $f(x) = f(x_0)$ for some $x \neq x_0$
(E) No, $(\spadesuit)$ is nonsense if $f(x) = f(x_0)$ for infinitely many $x \neq x_0$
(F) No, $(\spadesuit)$ is nonsense if $f(x_n) = f(x_0)$ for a sequence $\{x_n\}$ that converges to x_0
(G) Yes, we just need to take care of some special cases separately
(H) No, we need a much more devious argument to prove the chain rule in general
(I) No, the chain rule is actually false in general