

## QUIZ 6

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1. Prove that  $(\tan x)' = \sec^2 x$ . (*Hint*: recall that  $\tan x = \sin x / \cos x$  and differentiate using the quotient rule).
2. Use the power rule for integer exponents and implicit differentiation to prove the power rule for rational exponents (*Hint*: Let  $y := x^{\frac{p}{q}}$  where  $p$  and  $q$  are integers. Then  $y^q = x^p$ . Differentiate both sides implicitly to show that  $y' = \frac{p}{q}x^{\frac{p}{q}-1}$ ).

*Each problem is worth 5 points.*