

4.2 Exercises

28. Suppose f is an odd function and is differentiable everywhere. Prove that for every positive number b , there exists a number c in $(-b, b)$ such that $f'(c) = f(b)/b$.

29. Use the Mean Value Theorem to prove the inequality

$$|\sin a - \sin b| \leq |a - b| \quad \text{for all } a \text{ and } b$$

30. If $f'(x) = c$ (c a constant) for all x , use Corollary 7 to show

32. Use the method of Example 6 to prove the identity

$$2 \sin^{-1} x = \cos^{-1}(1 - 2x^2) \quad x \geq 0$$

33. Prove the identity

$$\arcsin \frac{x-1}{x+1} = 2 \arctan \sqrt{x} - \frac{\pi}{2}$$

34. At 2:00 PM a car's speedometer reads 30 mi/h. At 2:10 PM it