3.5 The Trigonometric Functions

Name: Date:

P 11. Find the derivative of $g(t) = (2 + \sin(\pi t))^3$

P 21. Find the derivative of $f(x) = \sqrt{3 + \sin(8x)}$

P 23. Find the derivative of $f(x) = \tan(\sin x)$

P 43. Find the derivative of $t(\theta) = \dfrac{\cos\theta}{\sin\theta}$

P 45. Find the derivative of $G(x) = \dfrac{\sin^2 x + 1}{\cos^2 x + 1}$

P 55. Let $f(x) = \sin^2 x + \cos^2 x$

(a) Find $f'(x)$ suing the formula for $f(x)$ and derivative formulas from this section. Simplify your answer.

(b) Use a trigonometric identity to check your answer to part (a). Explain.

P 58. The voltage, V, in volts, in an electrical outlet is given as a function of time, t, in seconds, by the function $V = 156\cos(120\pi t)$.

(a) Give an expression for the rate of change of the voltage with respect to time.

(b) Is the rate of change ever zero? Explain.

(c) What is the maximum value of the rate of change?