1.7 Introduction to Continuity

Name: Date:

P 5. Is the function $2x + x^{2/3}$ continuous on $[-1, 1]$?

P 9. Is the function $\dfrac{e^x}{e^x - 1}$ continuous on $[-1, 1]$?

P 11. Let $f(x) = x^3 + x^2 - 1$. Show that there exists a number c, with $0 \leq c \leq 1$, such that $f(c) = 0$.

P 25. Find a value of k making

$$h(x) = \begin{cases} kx, & 0 \leq x \leq 1 \\ 2kx + 3, & 1 < x \leq 5. \end{cases}$$

continuous on $[0, 5]$.

P 37.

(a) What does a graph of $y = e^x$ and $y = 4 - x^2$ tell you about the solutions to the equation $e^x = 4 - x^2$?

(b) Evaluate $f(x) = e^x + x^2 - 4$ at $x = -4, -3, -2, -1, 0, 1, 2, 3, 4$. In which intervals do the solutions to $e^x = 4 - x^2$ lie?