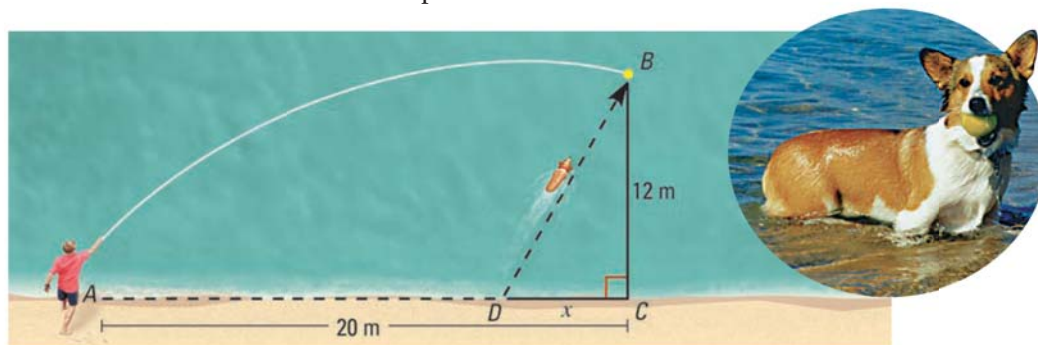


46. **MULTIPLE REPRESENTATIONS** A mathematician at a lake throws a tennis ball from point A along the water's edge to point B in the water, as shown. His dog, Elvis, first runs along the beach from point A to point D and then swims to fetch the ball at point B .



- a. **Using a Diagram** Elvis's running speed is about 6.4 meters per second. Write a function $r(x)$ for the time he spends running from point A to point D . Elvis's swimming speed is about 0.9 meter per second. Write a function $s(x)$ for the time he spends swimming from point D to point B .
- b. **Writing a Function** Write a function $t(x)$ that represents the total time Elvis spends traveling from point A to point D to point B .
- c. **Using a Graph** Use a graphing calculator to graph $t(x)$. Find the value of x that minimizes $t(x)$. *Explain* the meaning of this value.
47. **CHALLENGE** To approximate the square root of a number n , the Babylonians used a method that involves starting with an initial guess x and calculating a sequence of values that approaches the exact answer. Their method was based on the function shown at the right.

$$f(x) = \frac{x + \frac{n}{x}}{2}$$

- a. Let $n = 2$, and choose $x = 1$ as an initial guess for $\sqrt{n} = \sqrt{2}$. Calculate $f(x)$, $f(f(x))$, $f(f(f(x)))$, and $f(f(f(f(x))))$.
- b. How many times do you need to compose the function in order for the result to approximate $\sqrt{2}$ to three decimal places? six decimal places?

TAKS PRACTICE at classzone.com

MIXED REVIEW FOR TAKS

REVIEW

Lesson 5.1;
TAKS Workbook

48. **TAKS PRACTICE** Which expression is equivalent to $(6x^3y^5z^{-1})(-3x^{-4}y^2)$?

TAKS Obj. 5

(A) $-\frac{18y^{10}}{x^{12}z}$

(B) $-\frac{18z}{x^7y^3}$

(C) $-\frac{18y^7}{xz}$

(D) $-\frac{y^7}{18xz}$

REVIEW

Lesson 1.5;
TAKS Workbook

49. **TAKS PRACTICE** In a high school marching band, 68% of the members are underclassmen. The rest of the members of the marching band are seniors. Which equation best represents the number of seniors, s , in the band in terms of the total number of students, t , in the band? **TAKS Obj. 10**

(F) $s = \frac{8}{17}t$

(G) $s = \frac{8}{25}t$

(H) $s = \frac{17}{8}t$

(J) $s = \frac{25}{8}t$

