1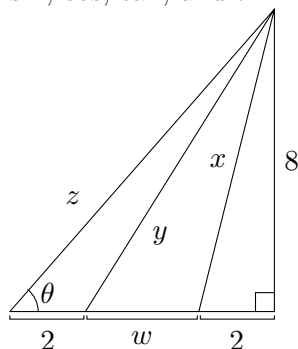. [9 points] Use the following diagram to answer the questions for this problem. Give your answers in **exact** form in terms of sin, cos, tan, and θ. Do not assume θ is a specific value.

a. [2 points] Find the length of x.

$$x = \underline{\qquad \sqrt{2^2 + 8^2} = \sqrt{68} \qquad}$$

b. [2 points] Find the length of z.

$$z = \underline{\qquad \frac{8}{\sin(\theta)} \qquad}$$

c. [3 points] Find the length of w.

$$w = \underline{\qquad \frac{8}{\tan(\theta)} - 4 \qquad}$$

d. [2 points] Find the length of y in terms of w.

$$y = \underline{\qquad \sqrt{(w+2)^2 + 8^2} \qquad}$$

2. [6 points] Determine whether the following functions are even, odd, or neither even nor odd. Circle your answer. You do no need to show any work for this problem.

    a. [2 points] The function $x^2 + x + 1$ is

       EVEN   ODD   ⟦NEITHER⟧

    b. [2 points] The function $\dfrac{x^4 + 1}{x^3 - x}$ is

       EVEN   ⟦ODD⟧   NEITHER

    c. [2 points] The function $3x\sin(x)$ is

       ⟦EVEN⟧   ODD   NEITHER