6. [8 points] For each of the statements below, circle TRUE or FALSE and *briefly explain* your reasoning. *Credit will only be given for a reasonable explanation—circling alone is no credit.*

a. [2 points] A degree-5 polynomial will always have 5 zeros.

TRUE [FALSE] NOT ENOUGH INFORMATION

Explanation:
One degree 5 polynomial with only one zero is $y = x^5$. However, that single zero *does* have a multiplicity of 5. But another example is $y = x^5 + 1$, and that has only 1 linear zero: $x = -1$. So not all degree 5 polynomials have 5 zeros, not even when accounting for multiplicity.

b. [2 points] Because a right triangle cannot contain any angles greater than 90°, we cannot find the sine or cosine of any angles greater than 90°.

TRUE [FALSE] NOT ENOUGH INFORMATION

Explanation:
When we define cos and sin with the unit circle, we can find the sine and cosine of any angle, not just those between 0° and 90°

c. [2 points] If $f(x)$ is an even function with domain $[-4, 4]$, then $f(x)$ is *definitely not* invertible.

[TRUE] FALSE NOT ENOUGH INFORMATION

Explanation:
Because $f(x)$ is even, then $f(-4) = f(4)$. Thus the same output is acheived twice, the function does not pass the horizontal line test, and cannot be invertible.

d. [2 points] The function $w(r) = 0.4e^{0.15r}$ is an exponentially decreasing function of r.

TRUE [FALSE] NOT ENOUGH INFORMATION

Explanation:
The function $w(r)$ is actually an exponentially *increasing* function of r. This is because when the continuous growth rate $k > 0$, we have exponential growth. Another way to see this is that $b = e^0.15 > 1$, so it must be increasing/growing.