3. [8 points] Indicate if each of the following is true or false by circling the correct answer. No justification is required.

a. [2 points] The equation $y^3 - x^3 = xy$ in Cartesian coordinates can be written in polar coordinates as
$$r = \frac{\sin\theta\cos\theta}{\sin^3\theta - \cos^3\theta}.$$

<div align="right">True   False</div>

b. [2 points] If $g(x) = \int_1^x f(t)dt$, then $g(4) - g(2) = \int_2^4 f(t)dt$.
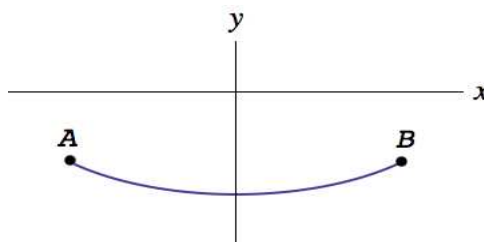
<div align="right">True   False</div>

c. [2 points] The function $h(x) = \int_0^{\sin x} e^{-t^2}dt$ has a local maximum at $x = \dfrac{\pi}{2}$.

<div align="right">True   False</div>

d. [2 points] The graph of the parametric equations $x = f(t)$ and $y = f'(t)$ for some function $f(t)$ is shown below:

As t increases, the curve is traced from A to B.

<div align="right">True   False</div>