Math 122B020F14 Quiz 4 October 16, 2014 Name: _____

1. While riding a Ferris wheel, you record your height H above the ground (in meters) at different times t (in minutes). Later, you decide that the function given below is a good model for $H(t)$:

$$H(t) = 22 - 20\cos(\pi t)$$

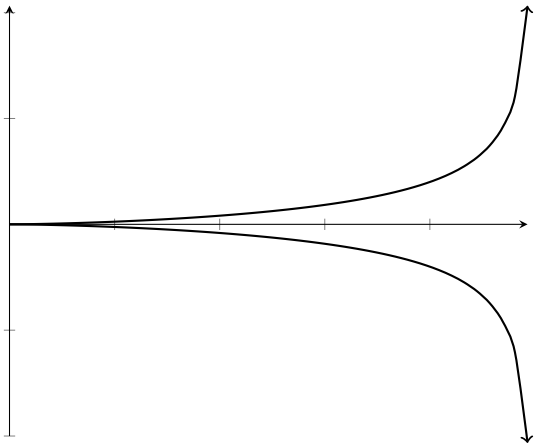
Find and interpret $H'(2)$ (you may approximate to 2 decimal places).

2. Suppose that $f(3) = -1$ and $f'(3) = 2$. Find $\frac{d}{dx}[f^{-1}(x)]$ at $x = -1$.

3. The curve described by the following equation is called a *Cissoid of Diocles*

$$x^3 + xy^2 = y^2$$

The set of points that satisfy this equation looks like this:



Find and simplify an expression for $\frac{dy}{dx}$ *in terms of* x *and* y.