Name:

1. (2 pts) Find $\frac{dy}{dx}$ for $y = \tan^{-1}(x^2)$

2. (2 pts) Use the given values to find $(f^{-1})'(a) : f(\pi) = 0, f'(\pi) = -1, a = 0$.

3. (2 pts) Give the standard domains and ranges of

   a. $\arccos(x)$

   b. $\arctan(x)$

4. (4 pts) Each of the following functions **could** be invertible on its domain. Specify any conditions to each that will ensure that it is or becomes invertible on the greatest domain possible, and specify an appropriate domain.

a. $\dfrac{1}{x^n}$ $\qquad\qquad$ $n \in \mathbb{N}$

b. $\dfrac{ax + b}{cx + d}$ $\qquad\qquad$ $c \neq 0$