

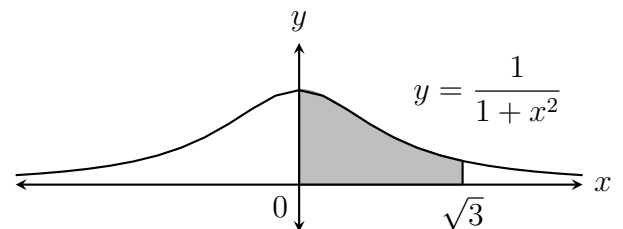
Name: _____

1. (10 points) Suppose $f(x)$ is a function for which $f'(x) = 3x^2 + 4$ and $f(2) = 7$. Find $f(x)$.

2. (10 points) Suppose f and g are functions for which $\int_0^5 f(x) dx = 3$, $\int_5^7 f(x) dx = -2$, and $\int_0^7 g(x) dx = 6$.

Find $\int_0^7 (f(x) - 3g(x)) dx$

3. (6 points) Find the indicated (shaded) area below the graph of $y = \frac{1}{1+x^2}$.



4. (24 points) Use the fundamental theorem of calculus to find the following definite integrals.

$$(a) \int_{-2}^2 (x^3 - x) dx =$$

$$(b) \int_1^e \frac{2}{x} dx =$$

$$(c) \int_0^1 (1 + \sqrt{x}) dx =$$

$$(d) \int_{\pi}^{2\pi} \sin(x) dx =$$