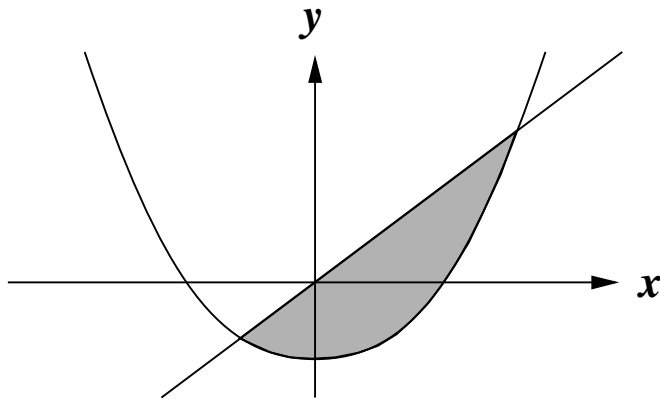


Name _____

1. (3 points) The graphs of $f(x) = x^2 - 21$ and $g(x) = 4x$ are sketched below and the area between the two curves is shaded in. Determine the exact area of this shaded region.



2. (4 points)

- Sketch the region bounded by $y = \ln x$, $y = 3$, $y = 0$, and $x = 0$.

- Set up, but do not evaluate, the definite integral(s) with respect to x which represent the area of this region.

- Set up, but do not evaluate, the definite integral(s) with respect to y which represent the area of this region.

- Compute the exact value for the area of this region. Simplify your answer.

3. (3 points) Sketch the graph of $f(x) = \cot x$ being sure to show more than just one period of the function. Now shade in the region between $f(x)$ and the x -axis on the interval $[\pi/4, \pi/2]$ and compute the exact area of this region. Simplify your answer.