Math 1552 Summer 2019
Worksheet 5 (§ 5.6 Area Bounded by Curves)
Name: _____
Section: _____

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1. Find the area of the region bounded by the curves.

   (a) $y = x^2 - 2$ and $y = 2$.

   (b) $y = x^2$ and $y = -x^2 + 4x$. (**Hint:** use the complete square $x^2 + ax + b = (x + \frac{a}{2})^2 + b - \frac{a^2}{4}$)

   (c) $x - y^2 = 0$ and $x + 2y^2 = 3$.

   (d) $x = y^3 - y^2$ and $x = 2y$.

2. Find the area of the region bounded bby $y = 2\sin x$ and $y = \sin(2x)$ on $[0, \pi]$ using the following procedure:

   (a) Using the identity $\sin(2x) = 2\sin x \cos x$, solve the equation $2\sin x = \sin(2x)$ on $0 \leq x \leq \pi$.

   (b) Reminding the fact that $y = 2f(x)$ ($y = f(2x)$, resp.) has a graph obtained by stretching (shrinking, resp.) that of $y = f(x)$ twice to y-axis (x-axis, resp.) direction, draw the graph of $y = 2\sin x$ and $y = \sin(2x)$.

   (c) Find the area based on the answers from (a) and (b).

3. Find the area of the region in the first quadrant that is bounded above by the curve $y = e^{2x}$, below by the curve $y = e^{x}$, and on the right by the line $x = \ln 3$. (**Hint:** $e^{\ln b} = b$)