Name: _____

Test Prep — 15.2 (General Regions in terms of x or y) — Math 126

Participation:

- +1: show written work from 15.2 homework; +1: participate in this test prep

Ch. 15 Problem Solving Template Review (same as 15.1)

- STEP 1 : Integrand? Write $\iint_D ??\, dA$
- STEP 2 : Draw the region, D, on the xy-plane.
- STEP 3 : Bounds — describe the region (**what today is about!**)
- STEP 4 : Evaluate.

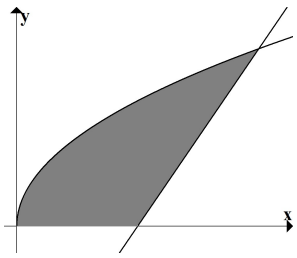
Notes on describing the region: The SAME advice and tools from Math 125.

- Draw the region first. Everything comes from the picture.
- For the order $\int\int ??\, dy\, dx$, we are fixing x and describing y in terms of x (i.e. top/bottom).
  One curve on top and one on bottom for the entire region... use $dy\, dx$.
  Meaning label x on the x-axis and label all curves in terms of x.
- For the order $\int\int ??\, dx\, dy$, we are fixing y and describing x in terms of y (i.e. left/right).
  One curve on left and one on right for the entire region... use $dx\, dy$.
  Meaning label y on the y-axis and label all curves in terms of y.

Most mistakes in this section are not calculus mistakes — they are region mistakes.

Winter 2016 - Exam 2 - Dr. Loveless (general region)

3(b) (7 pts) Let R be the region in the first quadrant of the xy-plane bounded by $y = x - 2$ and $y^2 = x$ (as shown). Set up the double integral $\iint_R 2y\, dA$ both ways. First in terms of y (easier), then in terms of x (requires splitting the region into two parts).



For all below, try to set it up, then compare with classmates and your TA. All solutions are in the exam archive.

Spring 2014 - Exam 2 - Dr. Loveless

3(a) Let D be the region bounded by $y = x^2$ and $y = 2x$. Evaluate: $\iint_D (x + y)\, dA$

Winter 2016 - Exam 2 - Dr. Loveless

3(b) Let D be the region bounded by $y = x$, $y = 0$, and $x = 2$. Evaluate: $\iint_D x\, dA$

Spring 2013 - Exam 2 - Dr. Loveless (reversing order)

3(a) Evaluate the integral by reversing the order of integration: $\int_0^4 \int_{y/2}^2 f(x, y)\, dx\, dy$.

(*The goal is to draw the region, then relabel.*)

Please, please ask if you are having trouble drawing or labeling. These skills are not just important for this class — they show up in almost every math and science course you take.