

MATH 102.5 (Term 122)

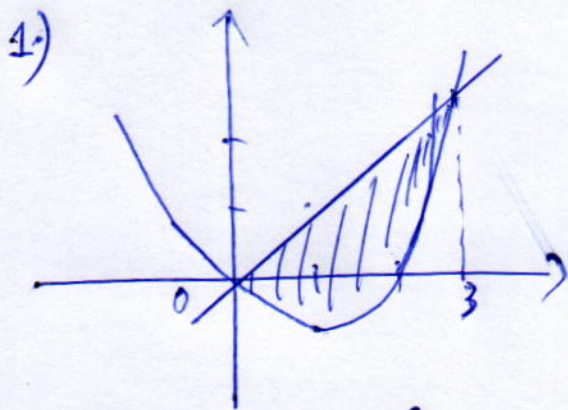
Quiz 2 (Sects. 5.6-6.1)

Duration: 20mn

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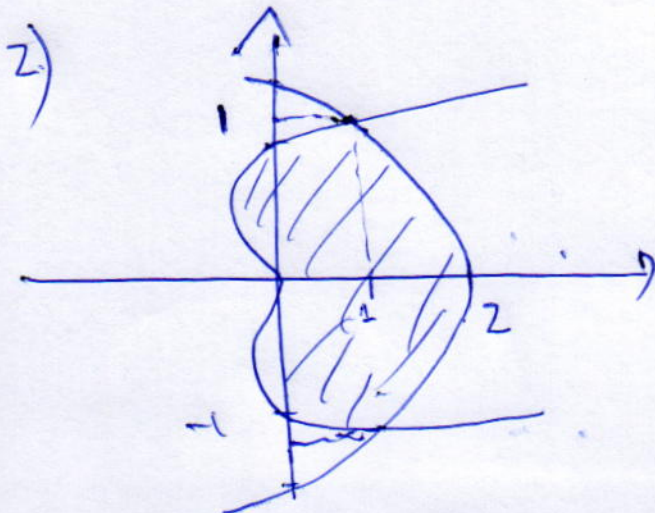
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- 1.) (3pts) Evaluate the area of the region bounded by the curve  $y = x^2 - 2x$  and the line  $y = x$ .
- 2.) (3pts) Evaluate the area of the region enclosed by the two curves  $x = 2 - y^2$  and  $x = 2y^4 - y^2$ .
- 3.) (4pts) Find the volume of the solid generated by revolving the region enclosed by the triangle with vertices  $(1, 0)$ ,  $(2, 0)$  and  $(2, 1)$  about the  $y$ -axis.

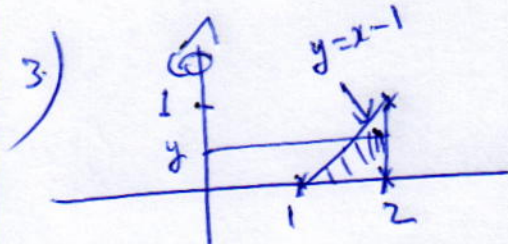


$$x^2 - 2x = x \Rightarrow x^2 - 3x = 0, \begin{matrix} x=0 \\ x=3 \end{matrix}$$

$$\begin{aligned} A &= \int_0^3 [x - (x^2 - 2x)] dx \\ &= \int_0^3 (3x - x^2) dx \\ &= \left[ \frac{3x^2}{2} - \frac{x^3}{3} \right]_0^3 = \frac{9}{2} \end{aligned}$$



$$\begin{aligned} A &= \int_{-1}^1 [(2 - y^2) - (2y^4 - y^2)] dy \\ &= 2 \int_{-1}^1 (1 - y^4) dy = 2 \left[ y - \frac{y^5}{5} \right]_{-1}^1 \\ &= \frac{16}{5} \end{aligned}$$



$$\begin{aligned} V &= \pi \int_0^1 [2 - (y+1)]^2 dy \\ &= \pi \int_0^1 (-y^2 + 2y + 3) dy \\ &= \pi \left[ -\frac{y^3}{3} + y^2 + 3y \right]_0^1 = \frac{5\pi}{3} \end{aligned}$$