

Friday - March 4, 2016

⑬  $y = x^2$   $y = 4x - x^2$



a) x-axis

$$\pi \int_0^2 (4x - x^2)^2 dx - \pi \int_0^2 (x^2)^2 dx$$

$$\pi \left[ \left( \frac{16}{3}x^3 - 2x^4 + \frac{1}{5}x^5 \right) - \left( \frac{1}{5}x^5 \right) \right]_0^2 = \boxed{\frac{32}{3}\pi}$$

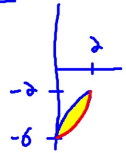
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b)  $y = 6$

$y = x^2 - 6$   $y = 4x - x^2 - 6$



$$\pi \int_0^2 (x^2 - 6)^2 dx - \pi \int_0^2 (-x^2 + 4x - 6)^2 dx$$

$$\pi \int_0^2 (x^4 - 12x^2 + 36) dx - \pi \int_0^2 (x^4 - 8x^3 + 28x^2 - 48x + 36) dx$$

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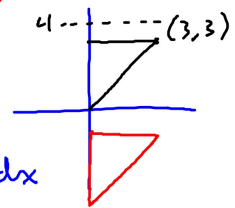
$$\pi \int_0^2 (x^2 - 6)^2 dx - \pi \int_0^2 (-x^2 + 4x - 6)^2 dx$$

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$$\pi \left[ \left( \frac{x^5}{5} - 4x^3 + 36x \right) - \left( \frac{x^5}{5} - 2x^4 + \frac{28}{3}x^3 - 24x^2 + 36x \right) \right]_0^2$$

$\rightarrow = \frac{64}{3}\pi$

⑮



$$\pi \int_0^3 (x-4)^2 dx - \pi \int_0^3 (3-4)^2 dx$$

