

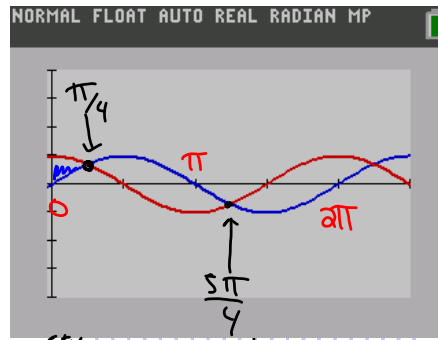
Find the area between

$f(x) = \sin x$

and

$g(x) = \cos x$

on $[0, 2\pi]$



$$\int_0^{\pi/4} \cos x - \sin x \, dx + \int_{\pi/4}^{5\pi/4} \sin x - \cos x \, dx + \int_{5\pi/4}^{2\pi} \cos x - \sin x \, dx$$

$$\sin x + \cos x \Big|_0^{\pi/4}$$

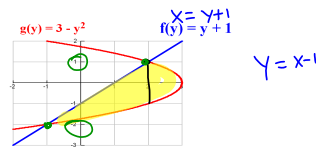
$$F(\pi/4) - F(0)$$

$$(\sin \pi/4 + \cos \pi/4) - (\sin 0 + \cos 0)$$

$$\left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right) - (0 + 1)$$

$$\frac{2\sqrt{2}}{2}$$

$$\sqrt{2} - 1$$



$$A = \int_{y_1}^{y_2} [(right\ curve) - (left\ curve)] \, dy$$

in variable y

$$\int_{-2}^1 (3 - y^2 - (y + 1)) \, dy$$

$$\int_{-2}^1 (2 - y - y^2) \, dy$$

$$\int_{-2}^1 (2 - y - y^2) \, dy$$

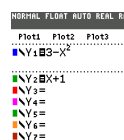
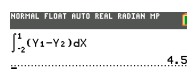
$$2y - \frac{y^2}{2} - \frac{y^3}{3} \Big|_{-2}^1$$

$$\left(2 - \frac{1}{2} - \frac{1}{3}\right) - \left(-4 - 2 + \frac{8}{3}\right)$$

$$2 - \frac{1}{2} - \frac{1}{3} + 4 - 2 + \frac{8}{3}$$

$$8 - 3 - \frac{1}{2}$$

$$5 - \frac{1}{2} = \frac{9}{2}$$



Find the area between

$$f(y) = y(2-y)$$

$$x = y(2-y)$$

and

$$g(y) = -y$$

$$g(y) = -y$$

$$x = -y \quad y = -x$$

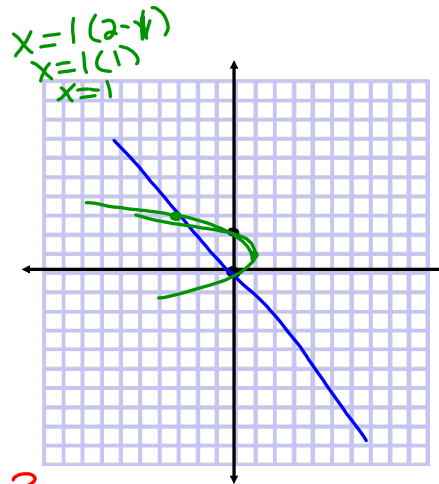
$$-y = y(2-y)$$

$$-y = 2y - y^2$$

$$y^2 - 3y = 0$$

$$y(y-3) = 0$$

$$y = 0, 3$$



$$\int_0^3 y(2-y) - (-y) dy$$

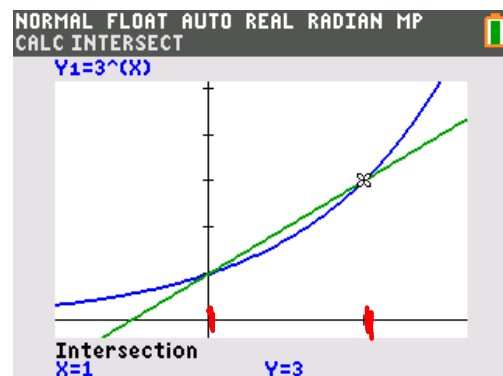
$$\int_0^3 2y - y^2 + y dy$$

∴
Finish

Calculator problems!!!! $3^x = 2x + 1$

Find the area between $f(x) = 3^x$ and $g(x) = 2x + 1$

$$\int_0^1 (2x+1) - 3^x dx$$



Set up integral
Use calculator

talk ab

Area as Accumulation...

Your salary is given by: $S(t) = 30e^{.06t}$ (in thousands of \$)

How much total money will you make in 5 years?

$$\int_0^5 30e^{.06t} dt$$