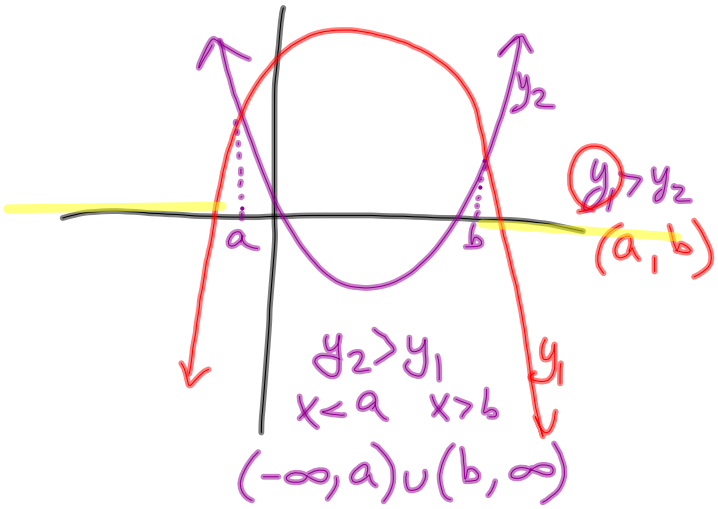
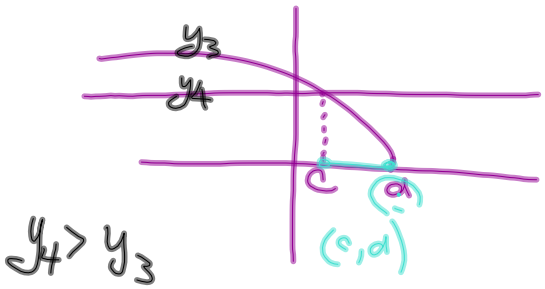
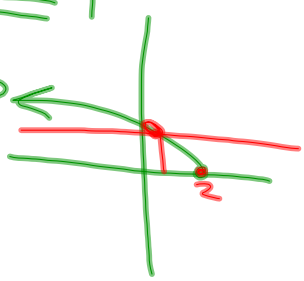




$\sqrt{2-x} \leq 1$

Domain?

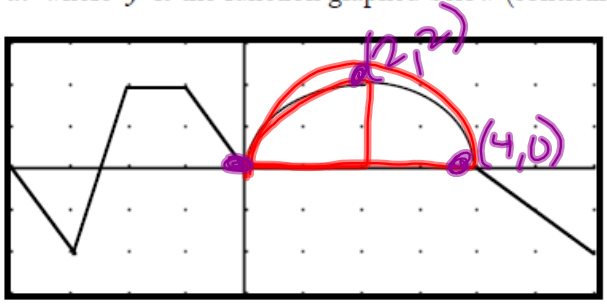


$2 - x \geq 0$

$2 \geq x$

$(-\infty, 2]$

Example 2) Let $F(x) = \int_0^x f(t)\,dt$ where f is the function graphed below (consisting of lines and a semi-circle)



Also graph of $F'(x)$

$F'(4) = 0$

a) $F(2) = \int_0^2 f(t)\,dt = \pi$

c) $F(4) = \int_0^4 f(t)\,dt = 2\pi$

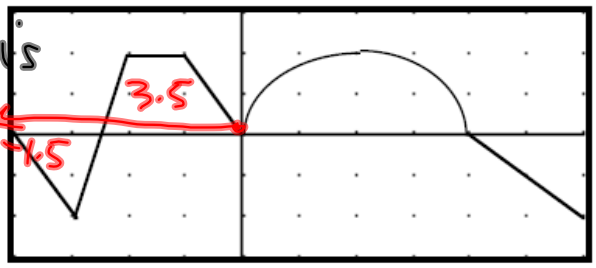
1 $F(x) = \int_0^x f(t)\,dt$

$F'(x) = \frac{d}{dx}\int_0^x f(t)\,dt =$

$F'(x) = f(x)$

Example 2) Let $F(x)=\int_0^x f(t)\,dt$ where f is the function graphed below (consisting of lines and a semi-circle)

This graph is also $F'(x)$.



Find the following:

$F(4)=\int_0^4 f(t)\,dt = 2\pi$ $\quad F(4)=2\pi$

$F(-4)=\int_0^{-4} f(t)\,dt = -2$ $\quad F(-4)=-2$

m) On what subintervals of $[-4,6]$ is F increasing and decreasing. Justify your answer.

$F(x)$ is increasing when $F'(x)$ is positive: $(-2.5,0)\cup(0,4)$

$F(x)$ is decreasing when $F'(x)$ is negative: $(-4,-2.5)\cup(4,6)$.