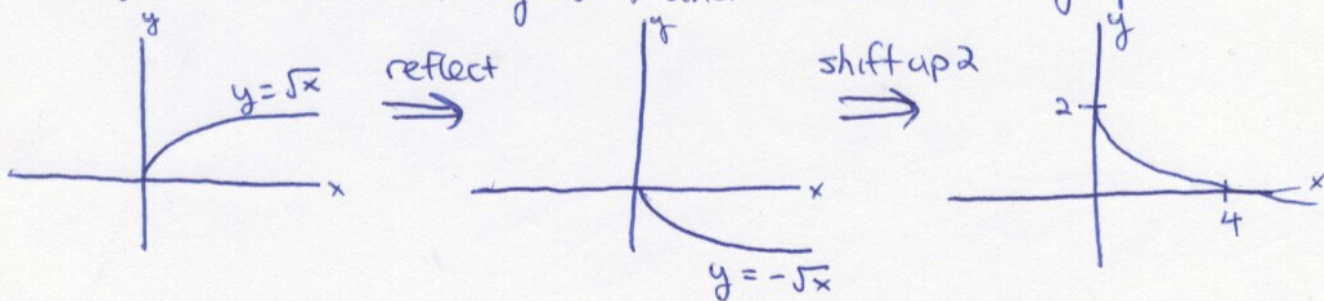


Math 1a: Section 9/29/05 (Thursday 9-10:30 pm, SC 507)

Nicole's Notes: Practice Problems

① Sketch $y = 2 - \sqrt{x}$

Answer: start with $y = \sqrt{x}$, and transform the graph

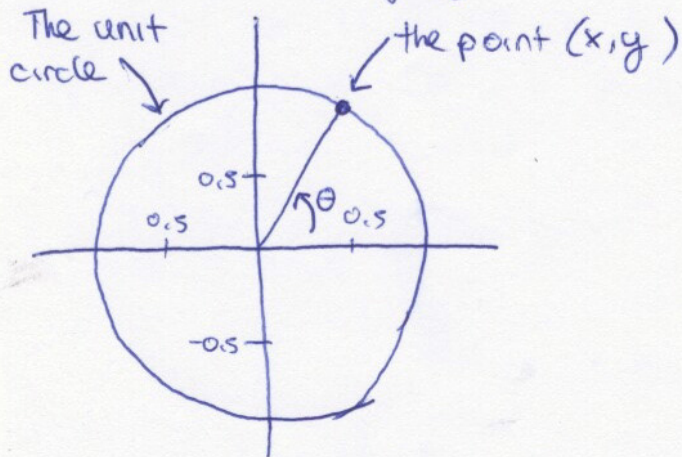


② Find the domain and range of $f(x) = y = 1 + \sin x$

domain: all real numbers, since we can take the sine of anything

range: $-1 \leq \sin x \leq 1 \Rightarrow 0 \leq 1 + \sin x \leq 2$ (add 1 to all sides)
 $\Rightarrow 0 \leq y \leq 2$ is the range

③ Given the following graph, find θ



Answer:

$$(x, y) = (\cos \theta, \sin \theta)$$

$$\text{So } x = \cos \theta \text{ and } y = \sin \theta$$

$$\theta = \arccos(x)$$

$$\text{or } \theta = \arcsin(y)$$

Now find $\tan \theta$

Answer: $\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{y}{x}$

④ Suppose $f(x) = 5x - 7$. Find $f(x^2)$

Answer:

$$f(x^2) = 5(x^2) - 7 = 5x^2 - 7$$

⑤ Suppose $x^2 - a^2 = 0$. Solve for x in terms of a

Answer:

$$x^2 - a^2 = (x+a)(x-a) = 0$$

$$\text{So either } x+a=0 \quad \text{OR} \quad x-a=0$$

$$\text{So } x=-a \quad \text{OR} \quad x=a$$

⑥ Simplify $\frac{x}{x-1} + \frac{1}{x+1}$ into one fraction

$$\frac{x}{x-1} + \frac{1}{x+1} = \frac{x(x+1) + 1(x-1)}{(x-1)(x+1)} = \frac{x^2 + x + x - 1}{x^2 - 1}$$

$$= \frac{x^2 + 2x - 1}{x^2 - 1}$$