

EI, I

- 1. Question 1: What is the domain of  $\arccos(x)$ ? Graph this function.
- 2. Question 2: If a ball is thrown into the air with a velocity of 30 ft/s, its height in feet t seconds later is  $y = 30t 16t^2$ . y'(t) = 30 32t
  - (a) Find the instantaneous velocity when t = 1.  $\rightarrow$  -2
  - (b) When does the ball land? y = t(30 16t) has Zerra 0,

3. Question 3: Graph the function  $f(x) = \begin{cases} 3x+5 & x \in [0,1] \\ \frac{1}{2}x + \frac{15}{2} & x \in [1,3] \\ (x-3)^2 & x \in [3,5] \end{cases}$ Calculate  $\lim_{x \to 1} f(x)$  and  $\lim_{x \to 3^+} f(x)$ 

- 4. Question 4: Calculate the following limits: (a)  $\lim_{x \to 3} \frac{x^2 - 2x - 3}{x^2 - 7x + 12} = \lim_{x \to 3} \frac{(x - 3)(x + 1)}{(x - 3)(x - 1)} = -4$ (b)  $\lim_{x \to 3} \frac{x - 1}{x^2 - 8x + 15} = \lim_{x \to -3} \frac{x - 1}{(x - 3)(x - 5)} = \infty$ (c)  $\lim_{x \to (\frac{\pi}{2})^+} \frac{1}{x} \sec(x) = -\infty$
- 5. Question 5: Calculate the following infinite limits:
  - (a)  $\lim_{x \to \infty} \frac{1}{x} = \bigcirc$ (b)  $\lim_{x \to \infty} e^{-x} + 2 = \bigcirc$
- 6. Question 6: Explain in your own words what  $\lim_{x\to 3} f(x)$  means.