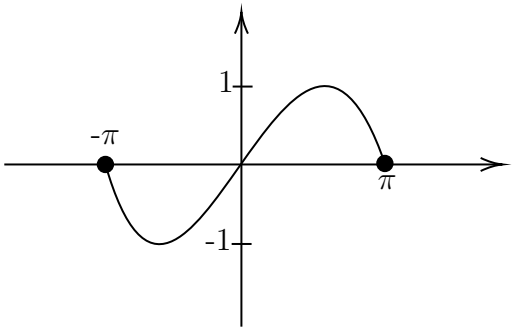
Math 150 - Week-In-Review 1

Sana Kazemi

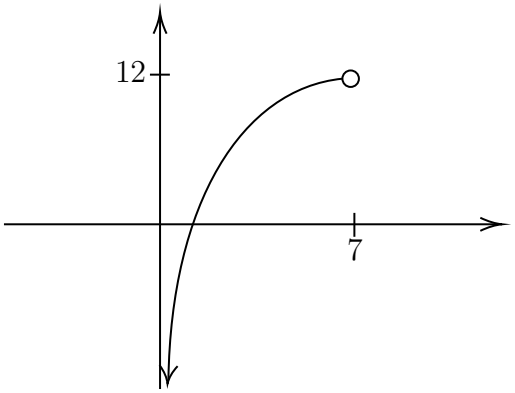
Problem Statements

1. Determine the domain and range of the following graphs.



Domain:

Range:



Domain:

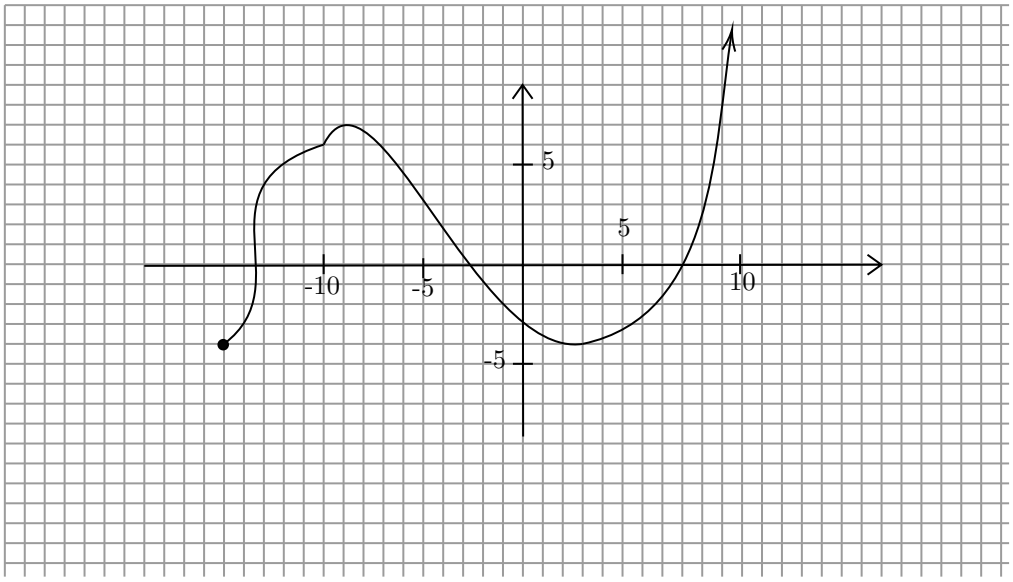
Range:

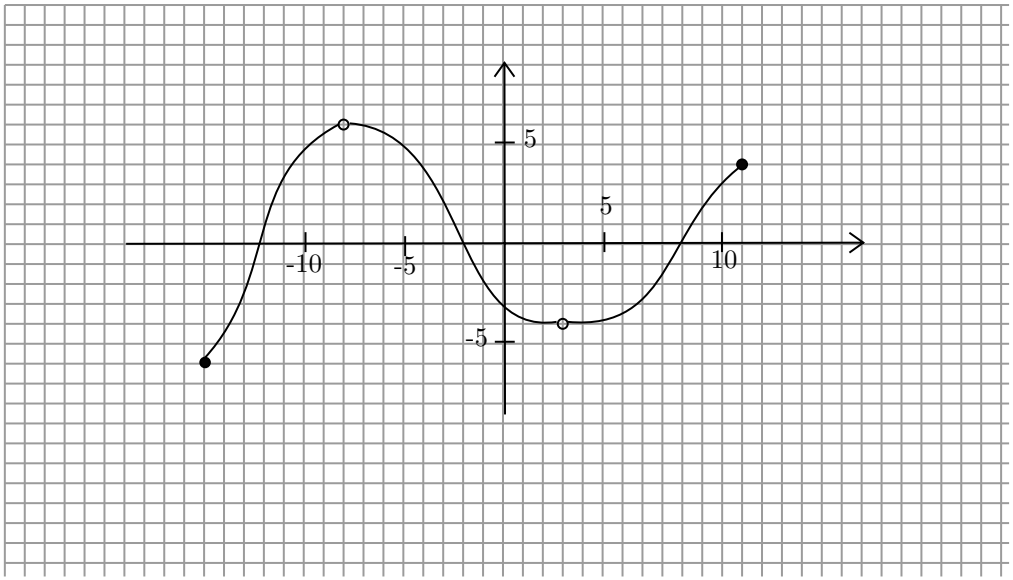
2. Identify and sketch the region given by $\{(t, t^2 - 1) |\ t = 1, t = 2\}$

3. Identify and sketch the region given by $\{(x, y) |\ x \geq 0\}$

4. Identify and sketch the region given by $\{(x, y) |\ y = 1\}$

5. Find the absolute extreme points of the following functions if they exist. Also state the interval of increase and decrease.





6. Which of the points $A(3,1)$, $B(-1,3)$ is closer to the point $C(-1,-1)$.

7. Test the following equation for symmetry. $y = x^3 - 9x$

8. Determine whether the following functions are even, odd or neither.
   (a) $g(x) = 1 - \sqrt[3]{x}$

   (b) $g(x) = \sqrt[3]{x^2 - 1}$

   (c) $h(x) = \dfrac{x^3}{x^4 + 2}$

9. Determine whether the following equations define y as a function of x.
   (a) $\sqrt{y} - x = 5$

   (b) $2x + |y| = 0$

10. Find an equation of the line through the points $(-1, -2)$ and perpendicular to the line $2x+5y+8 = 0$.

11. Find an equation of the line through the points $(10, -5)$ and $(6, -5)$.

12. Find average rate of change of the equation $h(t) = \dfrac{4}{3+2t}$ on the interval $[-2, 3]$.

13. If an object is dropped from a high cliff or a tall building, then the distance it has fallen after t second is given by the function $d(t) = 16t^2$. Find its average speed (average rate of change) over the interval $[a, a+h]$

14. Solve the following.
    (a) $|x+3| = x^2 - 4x - 3$

(b) $|3x + 2| \leq |x - 6| - 5$

15. Consider the function

$$h(x) = \begin{cases} -2x + 5 & \text{, if } x < -1 \\ 2x^2 - 4 & \text{, if } x > -1. \end{cases}$$

Find $h(-3)$, $h(-1)$, and $h(5)$.

16. Write a piecewise defined function for the graph below.