

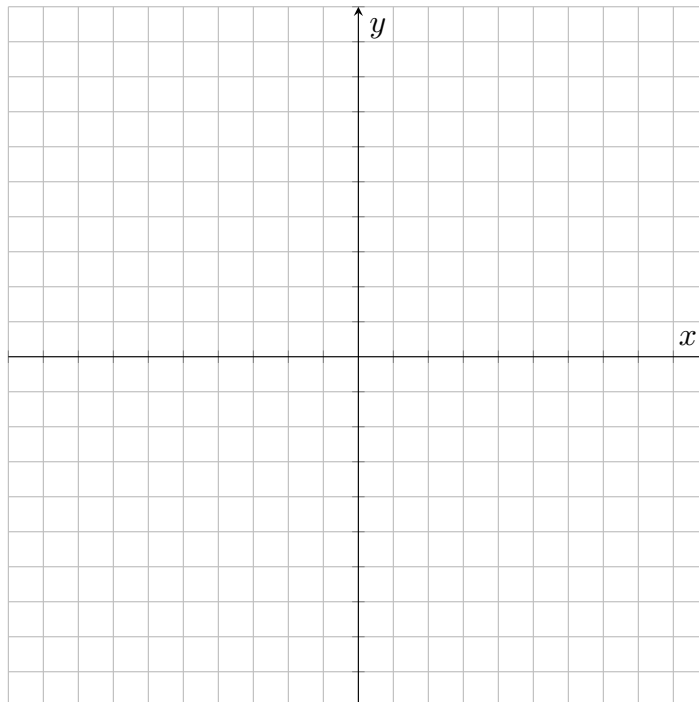


Math 150 - Week-In-Review 5
Saud Hussein

Section 4.1 – Properties of Root Functions and Their Graphs

1. (a) **Determine the domain of $f(x) = \sqrt{6 - 5x - x^2}$.**

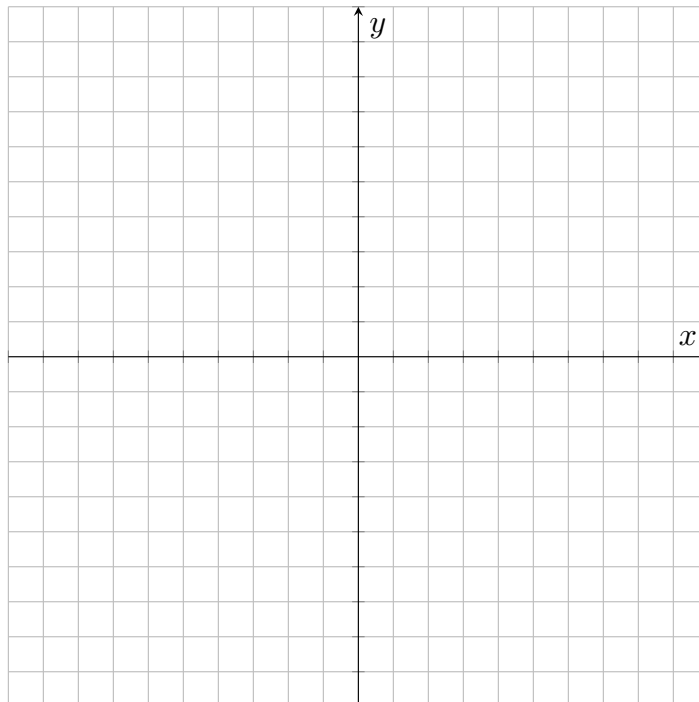
(b) **Sketch the graph of f , including any intercepts and asymptotes.**





2. (a) **Determine the domain of** $f(x) = \sqrt{\frac{(x+2)(x-3)}{x-1}}$.

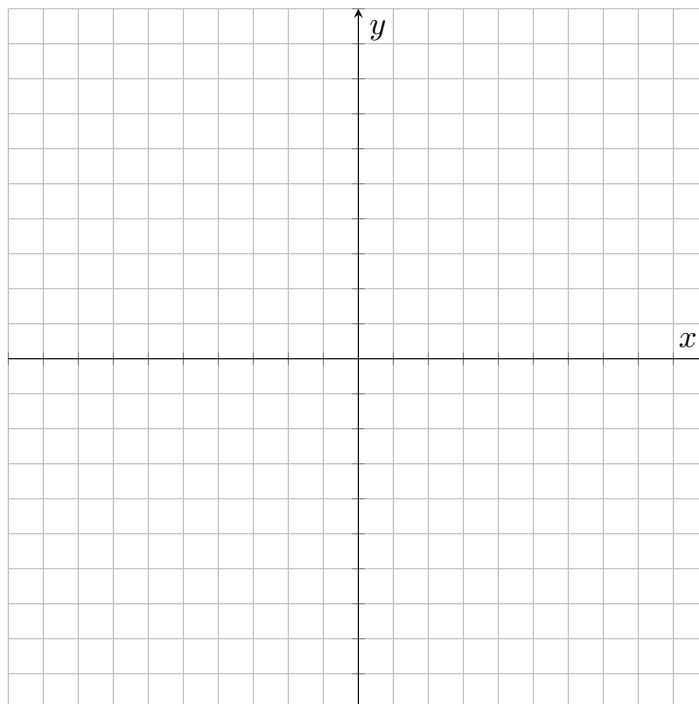
(b) **Sketch the graph of f , including any intercepts and asymptotes.**





3. (a) Determine the domain of $f(x) = \frac{2x}{\sqrt[3]{x^3 - 27}}$.

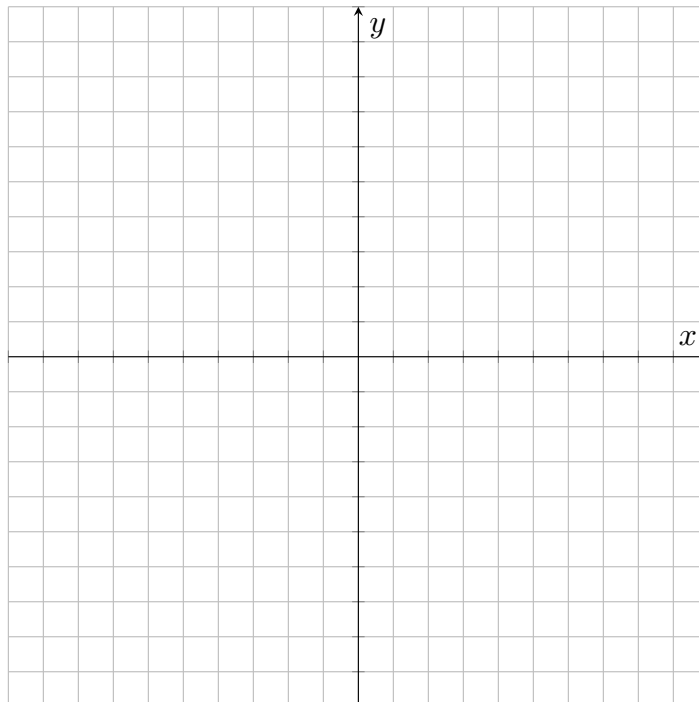
(b) Sketch the graph of f , including any intercepts and asymptotes.





4. (a) Determine the domain of $f(x) = \frac{2x}{\sqrt{x^2 - 16}}$.

(b) Sketch the graph of f , including any intercepts and asymptotes.

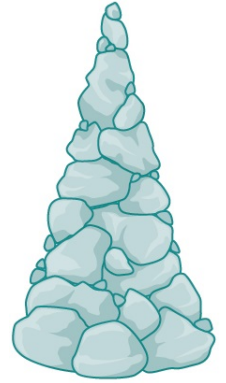




5. Park rangers may construct rock piles to mark trails or other landmarks. A mound of gravel in the shape of a right circular cone with the height equal to twice the radius of the base is constructed. The volume V of such a cone as a function of the radius r is given by

$$V(r) = \frac{2}{3}\pi r^3.$$

Determine the radius of the mound of gravel if the volume is 100 ft^3 .





Section 4.3 – Solving Equations Involving Root and Power Functions

1. Solve the following radical equations.

(a) $\sqrt{15 - 2x} = x$

(b) $\sqrt[3]{2x - 4} + 7 = 5$

(c) $\sqrt{3x + 7} + \sqrt{x + 2} = 1$

(d) $\sqrt{2x + 3} - \sqrt{x + 1} = 1$



(e) $x^{5/4} = 32$

(f) $(2x + 3)^{2/3} = 9$

(g) $(x - 1)^{3/4} = -27$



Section 4.4 – Solving Nonlinear Inequalities

1. Solve the following inequalities.

(a) $x^2 > x + 12$

(b) $4x^2 + 1 \leq 4x$

(c) $2x - x^2 \geq |x - 1| - 1$



$$(d) \quad -\frac{6x + 6}{x^2 - x - 2} \leq x + 3$$

$$(e) \quad \sqrt[3]{x} \leq x$$

$$(f) \quad 2(x - 2)^{-1/3} - \frac{2}{3}x(x - 2)^{-4/3} \leq 0$$