

q1). Solve the inequality,

$$\frac{x-4}{x^2-4} \leq 0$$

$$x^2-4=0$$

$$\sqrt{x^2} = \sqrt{4}$$

$$x \neq \pm 2$$

~~$$x-4=0$$~~

~~$$x=4$$~~

①

$$x-4 \leq 0$$

$$x \leq 4$$

$$x^2-4 > 0$$

$$\sqrt{x^2} > \sqrt{4}$$

$$x > 2, x < -2$$

① $(-\infty, -2) \cap (2, 4]$

② $(-2, 2) \cap [4, \infty)$

① $\frac{-}{+} = -$

②

$$x-4 \geq 0$$

$$x \geq 4$$

$$x^2-4 < 0$$

$$\sqrt{x^2} < \sqrt{4}$$

$$x < 2, x > -2$$

$$-2 < x < 2$$

$$\begin{aligned}
 61) \quad \frac{2 \cdot 1}{2 \cdot x} - \frac{1 \cdot x}{2 \cdot x} &= \frac{2-x}{2x} = \frac{2-x}{x-2} = \frac{2-x}{2x} \cdot \frac{1}{x-2} \\
 &= \frac{\cancel{2-x}}{2x} \cdot \frac{1}{-(x-2)} \\
 &= \frac{\cancel{2-x}}{2x} \cdot \frac{\textcircled{1}}{-(\cancel{2-x})} = \textcircled{2x} \\
 &= \boxed{\frac{1}{-2x}}
 \end{aligned}$$

29) Find $f(a)$, $f(a+h)$, $\frac{f(a+h)-f(a)}{h}$, where $h \neq 0$ (Difference Quotient)

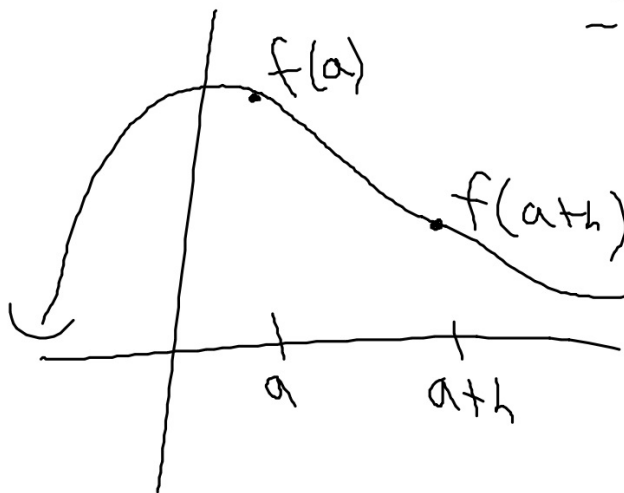
$$f(x) = 3x + 2$$

$$f(a) = (3a + 2)$$

$$\begin{aligned} f(a+h) &= 3(a+h) + 2 \\ &= 3a + 3h + 2 \end{aligned}$$

$$\frac{f(a+h)-f(a)}{h} = \frac{3a+3h+2 - (3a+2)}{h}$$

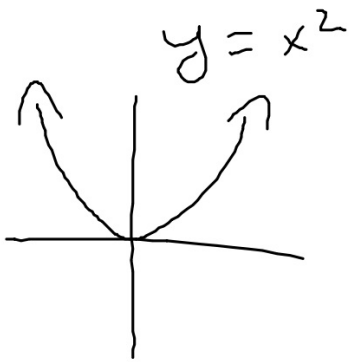
$$= \frac{\cancel{3a} + 3h + \cancel{2} - \cancel{3a} - \cancel{2}}{h}$$



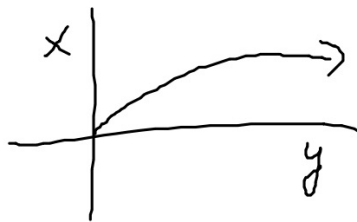
$$= \frac{3h}{h} = \boxed{3}$$

$$\frac{f(a+h)-f(a)}{a+h-a}$$

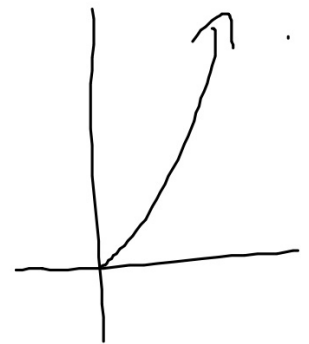
13) Test for symmetry and sketch.
#117) $(x)^2 = (\sqrt{y})^2$



Yes



No



127) Find an eq. for the line that passes through the origin and is parallel to the line $3x + 15y = 22$.

$$y - y_1 = m(x - x_1) \quad (0,0)$$

$$y = -\frac{1}{5}x$$

$$3x + 15y = 22$$

$$\frac{15y}{15} = \frac{22 - 3x}{15}$$

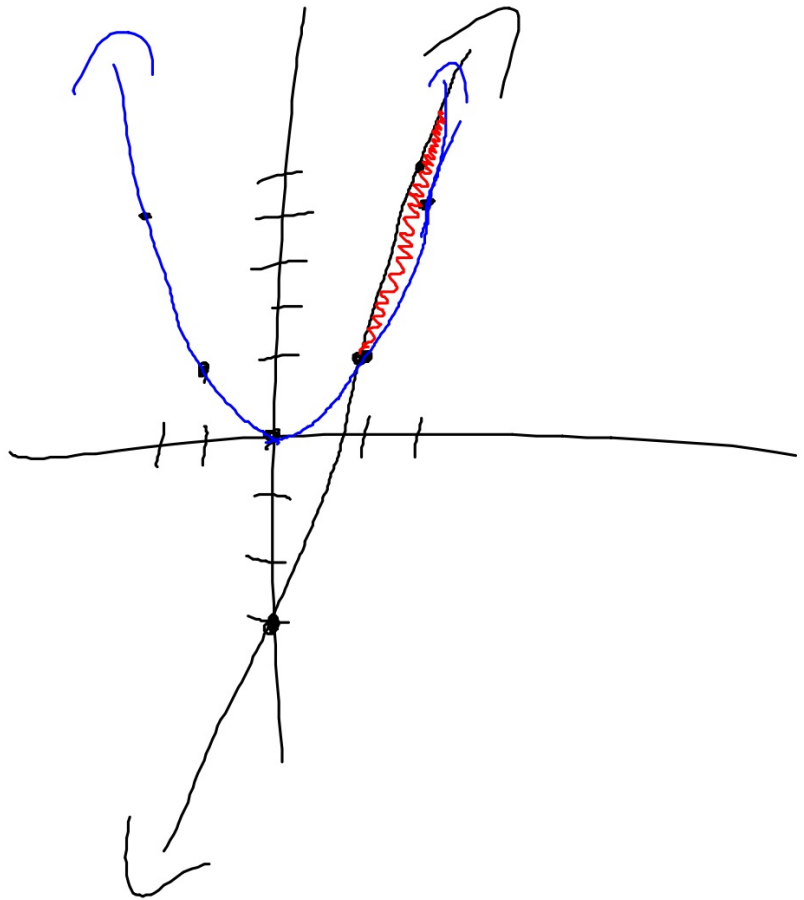
$$y = -\frac{1}{5}x + \frac{22}{15}$$

$$m = -\frac{1}{5}$$

97) Solve graphically.

$$4x - 3 \geq x^2$$

$[1, 3]$



zg. 155

$$33) f(x) = \frac{x}{x+1}$$

$$f(a) = \frac{a}{a+1}$$

$$f(a+h) = \frac{a+h}{a+h+1}$$

$$\frac{(a+1) \frac{a+h}{a+h+1} + \frac{-a}{a+1} \frac{(a+h+1)}{(a+h+1)}}{h}$$

$$= \frac{\cancel{a^2} + ah + a + h - \cancel{a^2} - ah - a}{(a+1)(a+h+1)} = \frac{h}{(a+1)(a+h+1)}$$

$$= \frac{1}{(a+1)(a+h+1)}$$

$$= \frac{1}{(a+1)(a+h+1)}$$

$$23) \sqrt[3]{(x^3y)^2 y^4}$$

$$= \sqrt[3]{x^3 x^3 y^2 y^3 y}$$

$$= \sqrt[3]{x^3 x^3 y^3 y^3}$$

$$= xxyy = \boxed{x^2 y^2}$$

pg. 155 Find the domain.

$$51) g(x) = \frac{\sqrt{2+x}}{3-x}$$

$$3) f(x) =$$
$$D: (-\infty,$$

$$3-x=0$$
$$-x=-3$$
$$x \neq 3 \quad \parallel$$

$$D: [-2, 3) \cup (3, \infty)$$

$$2+x < 0$$

$$[-2, 0] \cup [0, 3) \cup (3, \infty)$$

$$x \neq -2$$

$$\Rightarrow x \geq -2$$

$$4a) f(x) = \sqrt{2x-5}$$

$$2x-5 \geq 0$$

$$\frac{2x}{2} \geq \frac{5}{2}$$

$$x \geq \frac{5}{2}$$

$$D: \left[\frac{5}{2}, \infty \right)$$

$$53) g(x) = \sqrt[4]{x^2 - 6x}$$

$$x^2 - 6x \geq 0$$

$$x(x-6) \geq 0$$

$$x \geq 0 \text{ and } x-6 \geq 0 \Rightarrow x \geq 6$$

$$x \leq 0 \text{ and } x-6 \leq 0 \Rightarrow x \leq 6$$

$$x \geq 6 \text{ or } x \leq 0$$

$$(-\infty, 0] \cup [6, \infty)$$

35) $f(a), f(a+h), \frac{f(a+h)-f(a)}{h}, h \neq 0$. (Difference Quotient)

$$f(x) = 3 - 5x + 4x^2$$

$$f(a) = (3 - 5a + 4a^2)$$

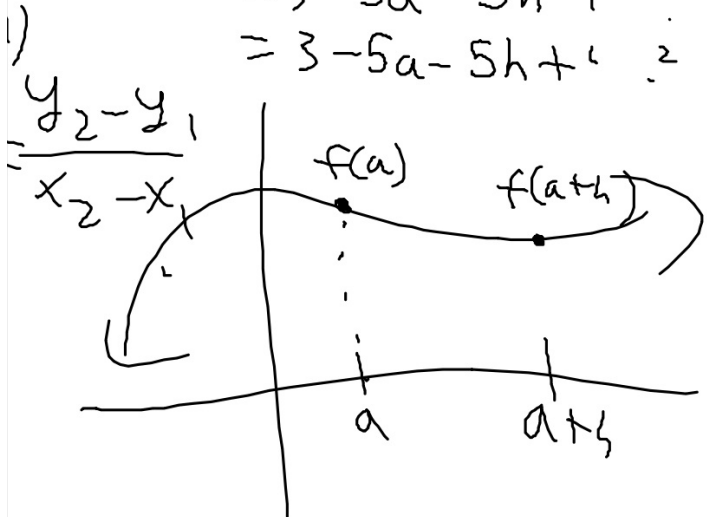
$$\begin{aligned} f(a+h) &= 3 - 5(a+h) + 4(a+h)^2 \\ &= 3 - 5a - 5h + 4a^2 + 8ah + 4h^2 \\ &= 3 - 5a - 5h + 4a^2 + 8ah + 4h^2 \end{aligned}$$

$$\Delta Q = \frac{3 - 5a - 5h + 4a^2 + 8ah + 4h^2 - (3 - 5a + 4a^2)}{h}$$

$$\frac{\cancel{3} - \cancel{5a} - 5h + \cancel{4a^2} + 8ah + 4h^2 - \cancel{3} + \cancel{5a} - \cancel{4a^2}}{h}$$

$$= \frac{-5h + 8ah + 4h^2}{h} = h(-5 + 8a + 4h)$$

$$= \boxed{-5 + 8a + 4h}$$



pg. 131 express as inequality

5). $[-2, 6)$

$$\boxed{-2 \leq x < 6}$$

express in int. notat

7. $x \geq 5$

$$[5, \infty)$$

101) Sketch.

$\{(x, y)\}$

$$9) |3 - |-9||.$$

$$= |3 - 9| = |-6|$$

$$= 6 .$$

Pg. 155. Find the domain.

$$57) \frac{(x+1)^2}{\sqrt{2x-1}}$$

$$2x - 1 > 0$$

$$2x > 1$$

$$x > \frac{1}{2}$$

$$D: \left(\frac{1}{2}, \infty \right)$$

85) Abbie paints twice as fast as Beth.
 " " three times as fast as Cathie.
 Together it takes ~~11~~ ^{60 min} to paint the room.
 How long will it take Abbie painting alone?

S = Abbie's painting speed.
 t = time

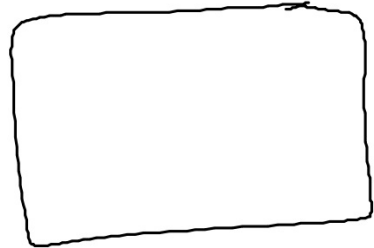
$$\frac{600}{11} t = 100(11)$$

$$\frac{600t}{600} = \frac{1100}{600}$$

$$t = \frac{11}{6}$$

$$t = 1 \frac{5}{6} \text{ hr}$$

$$= 110 \text{ min.}$$



$$\frac{1}{7}x + \frac{1}{2}x + \frac{1}{3}x = 100 \text{ A} - x \%$$

$$\frac{6x + 3x + 2x}{6} = 100(6) \text{ B} - \frac{1}{2}x \%$$

$$11x = 600 \text{ C} - \frac{1}{3}x \%$$

$$x = \frac{600}{11} \%$$

127) Find the eq for the line passing through $(0,0)$ Origin and is parallel to the line $3x + 15y = 22$

$$y - y_1 = m(x - x_1)$$

$$y = -\frac{1}{5}x$$

$$\frac{15y}{15} = \frac{22}{15}$$

$$m = -$$