ch2Rev

34 $\frac{2}{2x+3} \le \frac{2}{x-5}$

$\frac{2}{2x+3} - \frac{2}{x-5} \le 0$

$\frac{2(x-5) - 2(2x+3)}{(2x+3)(x-5)} \le 0$

$\frac{2x-10-4x-6}{(2x+3)(x-5)} \le 0$

$\frac{-2x-16}{(2x+3)(x-5)} \le 0$

$\frac{-2(x+8)}{(2x+3)(x-5)} \le 0$ want neg.

Side • $x+8=0$, $x=-8$ good

• $2x+3=0$, $x=-\frac{3}{2}$ bad

• $x-5=0$, $x=5$ bad

	-2	-8	$-\frac{3}{2}$	5
$x+8$	−	+	+	+
$2x+3$	−	−	+	+
$x-5$	−	−	−	+

Ans: $[-8, -\frac{3}{2})$ or $(5, \infty)$

22 a) $f(x) = \sqrt{3x-4}$

Domain: $3x-4 \ge 0$

$3x \ge 4$

$x \ge \frac{4}{3}$

Domain: $[\frac{4}{3}, \infty)$

Range: $[0, \infty)$

b) $f(x) = \frac{1}{(x+3)^2}$

Domain: $(x+3)^2 \ne 0$

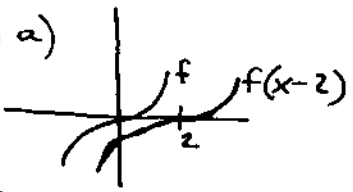
$x+3 \ne 0$

$x \ne -3$

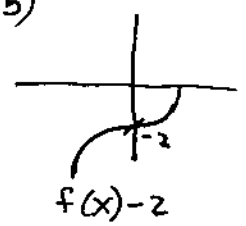
Domain: $\mathbb{R}$ except $x=-3$

Range: $(0, \infty)$

54 a)

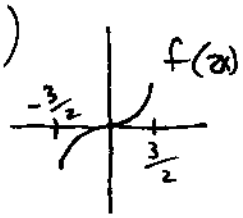


b)

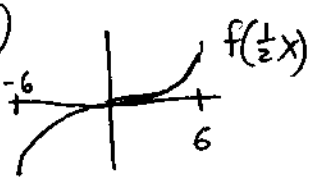


c)

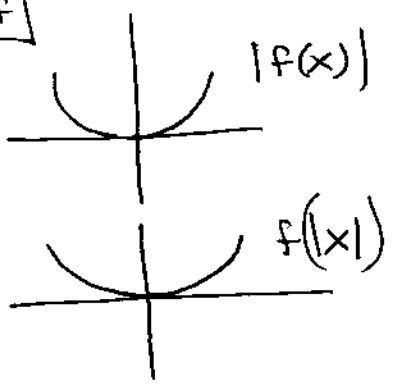
d)



e)



54f



70 $f(x) = \frac{x}{3x+2}$ $g(x) = \frac{2}{x}$

Domain: $\mathbb{R}$ except $x = -\frac{2}{3}$ | D: $\mathbb{R}$ except 0

a) $(f \circ g)(x) = f(g(x))$

$= f(\frac{2}{x}) = \frac{\frac{2}{x}}{3(\frac{2}{x})+2}$

$= \frac{\frac{2}{x}}{\frac{6+2x}{x}} = \frac{2}{x} \cdot \frac{x}{2x+6}$

$= \frac{1}{x+3}$, D: $\mathbb{R}$ except $x = 0, -3$

b) $(g \circ f)(x) = g(f(x))$

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

$= \frac{2(3x+2)}{x}$, D: $\mathbb{R}$ except $x = -\frac{2}{3}, 0$

74 a) V = value of house ($)

t = # yrs after purchase

Pts: $(0, 89000)$, $(6, 125000)$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{125000 - 89000}{6 - 0}$

$m = 6000$

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

$V - 89000 = 6000(t - 0)$

$V = 6000t + 89000$

b) $103000 = 6000t + 89000$

$\frac{14000}{6000} = t$

$\frac{7}{3} = 2\frac{1}{3}$ years $= t$

ch3 Rev

4 Pts on y-axis ($x=0$) that are dist 13 from P(12,6).

$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

$13 = \sqrt{(12-0)^2 + (y-6)^2}$

$(13)^2 = 144 + y^2 - 12y + 36$

$0 = y^2 - 12y + 11$

$0 = (y-11)(y-1) \rightarrow y = 11$ or $y = 1$

Pts $(0,11)$, $(0,1)$