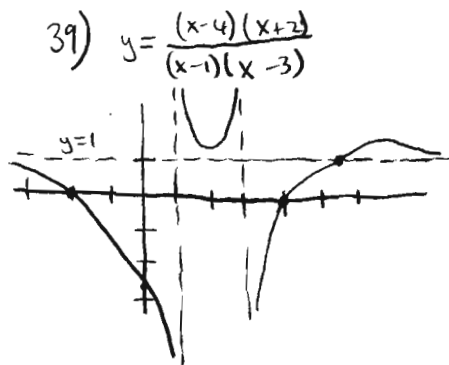


4, 7 # 2a, 6a, 10, 14, 16, 20, 26, 39-42, 49

2) (a) Domain: $(-\infty, 1) \cup (1, \infty)$
 x-intercepts $(-1, 0), (-4, 0)$
 y-intercept $(0, 24)$
 VA: $x = 1$
 HA: $y = 1$



42) $y = \frac{2x^2 - 3x - 2}{x^2 - 3x - 4}$
 $= \frac{(2x+1)(x-2)}{(x-4)(x+1)}$

HA $y = 2$

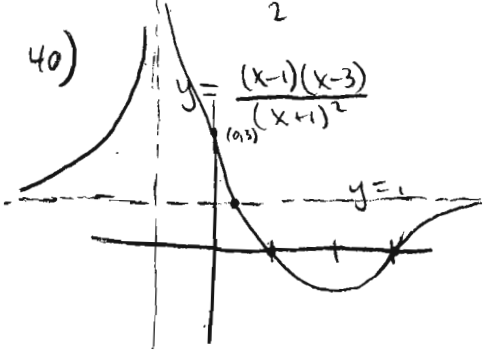
$2 = \frac{2x^2 - 3x - 2}{x^2 - 3x - 4}$

$2x^2 - 6x - 8 = 2x^2 - 3x - 2$
 $-6x - 8 = -3x - 2$
 $-6 = 3x$
 $x = -2$

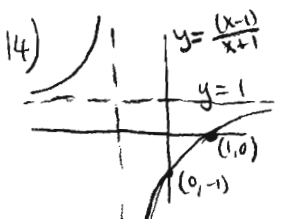
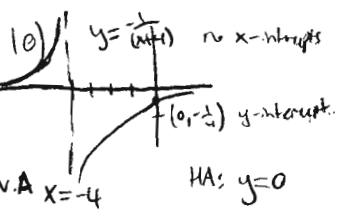
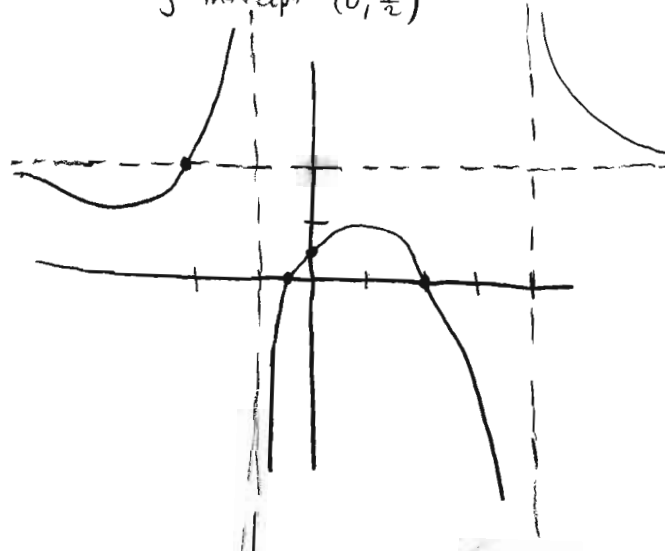
6) (a) Domain $(-\infty, \infty)$
 x-intercepts $(-3, 0)$ and $(3, 0)$
 y-intercept $(0, -9)$
 VA: none
 HA: $y = \frac{1}{4}$

$1 = \frac{(x-4)(x+2)}{(x-1)(x-3)}$

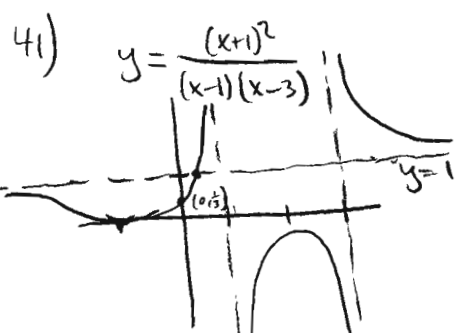
$x^2 - 4x + 3 = x^2 - 2x - 8$
 $-4x + 3 = -2x - 8$
 $11 = 2x$
 $\frac{11}{2} = x$



y-intercept $(0, \frac{1}{2})$

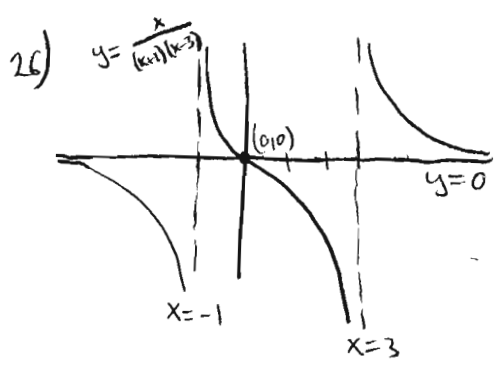
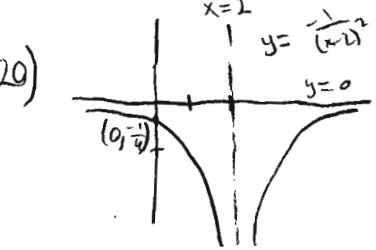
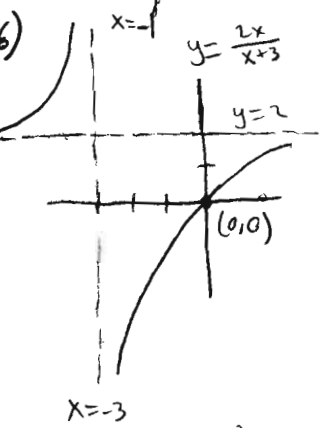
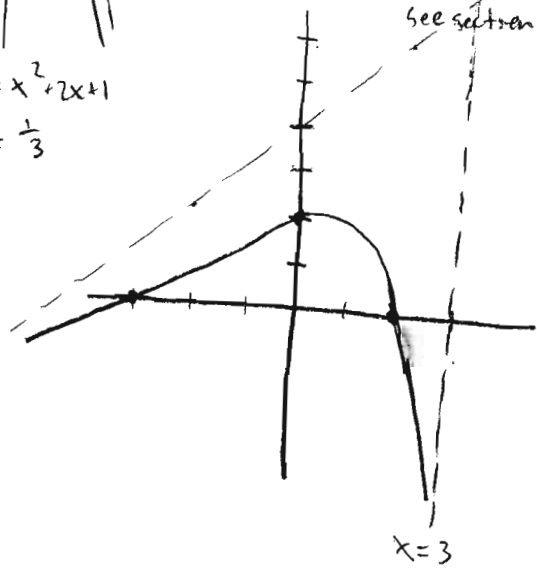


$x^2 + 2x + 1 = x^2 - 4x + 3$
 $6x = 2$
 $x = \frac{1}{3}$



49) $y = F(x) = \frac{x^2 + x - 6}{x - 3} = \frac{(x+3)(x-2)}{x-3}$

(a) we have not covered this yet see section 7.2



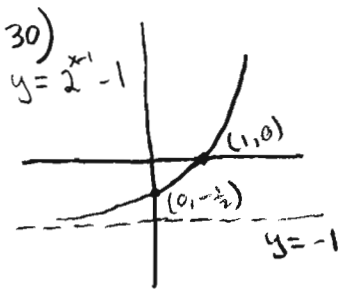
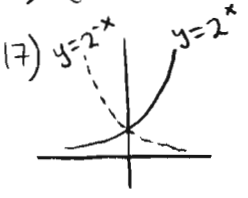
5.1# 4, 6, 8, 12, 13, 17, 30, 32, 42, 47, 58

- 4) 2
- 6) $3^4 = 81$
- 8) $10^4 = 10000$

- 12) (a) $x = 5$
- (b) $t = -2$
- (c) $3y + 1 = \frac{1}{2}$
 $3y = -\frac{1}{2}$
 $y = -\frac{1}{6}$

- (d) $3(z+1) = 5 + \frac{1}{2}$
 $z+1 = \frac{11}{6}$
 $z = \frac{5}{6}$

13) $(-\infty, \infty)$



X-intercept
 $0 = 2^{x-1} - 1$
 $1 = 2^{x-1}$
 $0 = x-1$
 $x = 1$

Y-intercept
 $y = 2^{-1} - 1 = -\frac{1}{2}$

32) X-intercept

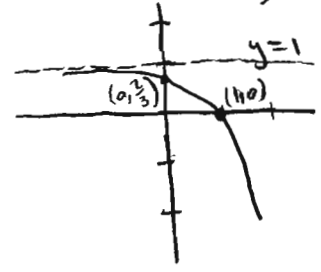
$$0 = 1 - 3^{x-1}$$

$$3^{x-1} = 1$$

$$x-1 = 0$$

$$x = 1$$

Y-intercept
 $y = 1 - 3^{-1}$
 $= 1 - \frac{1}{3} = \frac{2}{3}$



42) $\frac{(x+4)10^x}{x-3} = 2 \times 10^x$

$$\frac{(x+4)10^x}{x-3} - 2 \times 10^x = 0$$

$$10^x \left(\frac{x+4}{x-3} - 2 \right) = 0$$

$10^x = 0$ or $\frac{x+4}{x-3} - 2 = 0$
 no solutions.

$$\frac{x+4}{x-3} - \frac{2x(x-3)}{x-3} = 0$$

$$\frac{x+4 - 2x^2 + 6x}{x-3} = 0$$

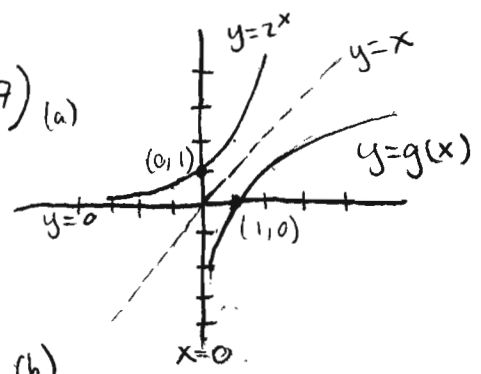
$$\frac{-2x^2 + 7x + 4}{x-3} = 0$$

$$\frac{(-2x-1)(x-4)}{x-3} = 0$$

$-2x-1 = 0$ or $x-4 = 0$
 $-2x = 1$ $x = 4$

$x = -\frac{1}{2}$

47) (a)



(b) Domain of g : $(0, \infty)$ (= range of f)
 Range of g : $(-\infty, \infty)$ (= domain of f)
 X-intercept $(1, 0)$
 Vertical Asymptote $x = 0$.

58) 0.6

5.2 # 1-8, 16, 18, 20, 35-42, 46, 48, 49, 59

- 1) false
- 2) false
- 3) false
- 4) false
- 5) true
- 6) true
- 7) false
- 8) true.

35) A, D, E, G

36) B, D, E, G

37) B, D, E, G

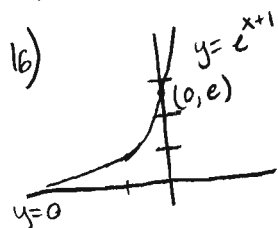
38) C, G

39) A, D, F, G, H

40) C, F, G

41) A, D, F, G, H

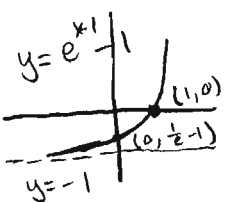
42) D, E,



Domain $(-\infty, \infty)$
Range $(0, \infty)$

18) $x \rightarrow 1$
 $y = e^{x-1}$
 $0 = x-1 \rightarrow x=1$

$y \rightarrow 1$
 $y = \frac{1}{e} - 1$

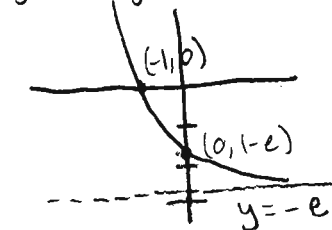


Domain $(-\infty, \infty)$
Range $(-1, \infty)$

20) $y = e^{-x} - e$

$x \rightarrow 1$ $e = e^{-x} \rightarrow -x = 1$

$y \rightarrow 1$ $y = 1 - e$



Domain $(-\infty, \infty)$

Range $(-e, \infty)$

46) 1.5

48) $\sqrt{e} = e^{\frac{1}{2}} \approx 1.65$

49) $\frac{1}{\sqrt{e}} = e^{-\frac{1}{2}} \approx 0.6$

59) (a) $e^\pi \approx 23 \leftarrow \text{larger.}$
 $\pi e \approx 22$

(b) $\pi e \approx 22.46$

$e^\pi \approx 23.14$

\uparrow
still larger.