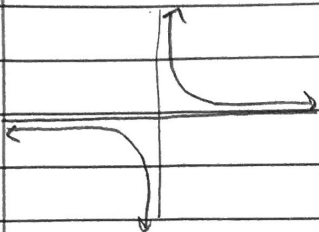


pg. 153

1, 3, 5-7, 9-10, 14-16, 19, 25-28

pg. 797 # 1-11, 13

1.

domain: $x \neq 0, x \in \mathbb{R}$ range: $y \neq 0, y \in \mathbb{R}$

intercepts: none

end behavior: $\lim_{x \rightarrow \pm\infty} f(x) = 0$ continuity: infinite @ $x=0$ increasing: \emptyset decreasing: $(-\infty, 0) \cup (0, \infty)$

3. $x = \sqrt{4-x} - 8$

$(x+8)^2 = (\sqrt{4-x})^2$

$x^2 + 16x + 64 = 4 - x$

$x^2 + 17x + 60 = 0$

$(x+12)(x+5) = 0$

$x = -12, x = -5$

5. $-2 + \sqrt{3x+2} = x$

$(\sqrt{3x+2})^2 = (x+2)^2$

$3x+2 = x^2 + 4x + 4$

$0 = x^2 + x + 2$

$x = \frac{-1 \pm \sqrt{1-4(1)(2)}}{2(1)} = \frac{-1 \pm \sqrt{-7}}{2}$

no solution

6. $56 - \sqrt[8]{7x^2+4} = 54$

$(2)^8 = (\sqrt[8]{7x^2+4})^8$

$256 = 7x^2 + 4$

$252 = 7x^2$

$36 = x^2$

$\pm 6 = x$

$$\begin{array}{r} 36 \\ 7 \overline{) 252} \\ \underline{-21} \\ 42 \end{array}$$

7. $x^4 - 5x^3 - 14x^2 = 0$

$x^2(x^2 - 5x - 14) = 0$

$x^2(x-7)(x+2) = 0$

$x=0 \quad x=7 \quad x=-2$

9. leading term = +
degree = even

$\lim_{x \rightarrow \pm\infty} f(x) = \infty$

10. leading term = -
degree = odd

$\lim_{x \rightarrow -\infty} f(x) = \infty$

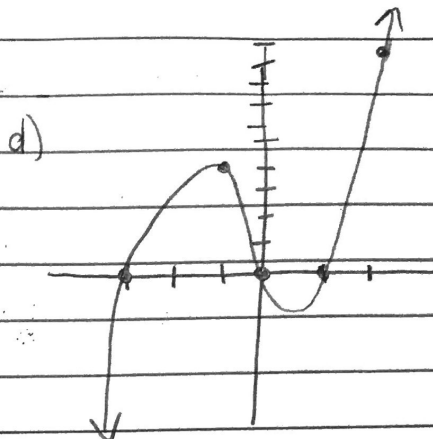
$\lim_{x \rightarrow \infty} f(x) = -\infty$

14. leading term = - $\lim_{x \rightarrow \pm \infty} f(x) = -\infty$
 degree = even

15. a) leading term = +
 b) $x = 0, 1, -3$ (multiplicity = 1)

c)

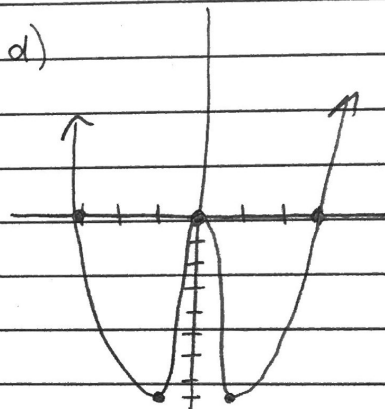
x	y	
-1	4	$-1(-2)(2)$
2	10	$2(1)(5)$



16. a) leading term = +
 b) $x^2(x^2 - 9) = 0$
 $\sqrt{x^2(x-3)(x+3)} = 0$
 $x = 0$ (mult = 2), $x = 3, x = -3$

c)

x	y
-1	-8
1	-8



19.

b) cubic reg. $y = -0.0713x^3 + 0.4146x^2 + 5.9095x + 546465$
 c) 44.89°

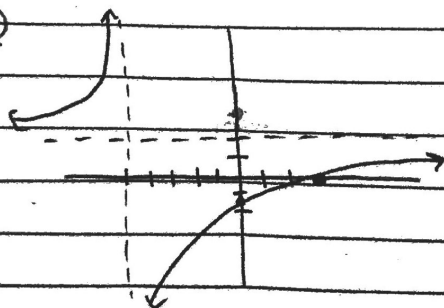
25. $\frac{2x-6}{x+5} = \frac{2(x-3)}{x+5}$

VA: $x = -5$

HA: $y = 2$

x-int: $(3, 0)$

y-int: $(0, -\frac{6}{5})$



domain: $x \neq -5, x \in \mathbb{R}$

26. $\frac{x^2+x-6}{x-4}$

VA: $x=4$

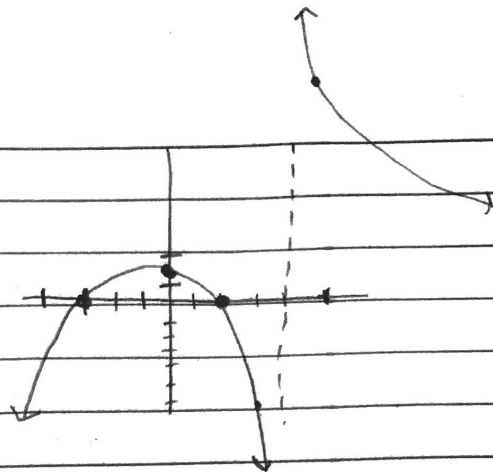
$(x+3)(x-2)$

HA: none

$x-4$

x-ints: $(-3,0), (2,0)$

y-int: $(0, \frac{3}{2})$



x	y	
5	24	$\frac{(8)(3)}{1}$
-4	$-\frac{6}{8}$	$\frac{(-)(-6)}{-8}$
3	-6	$\frac{(6)(1)}{-1}$
4.5	37.5	$\frac{(7.5)(2.5)}{0.5}$

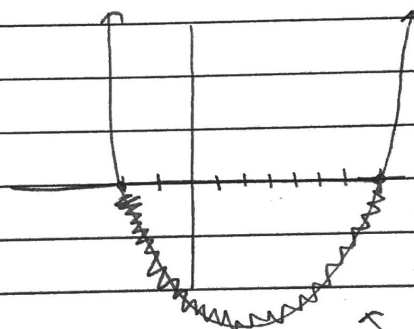
2x.5
+ 2.5

37.5
1500

11875
1875

3750

27. $x^2-5x-14 < 0$
 $(x-7)(x+2) < 0$
 $-2 < x < 7$



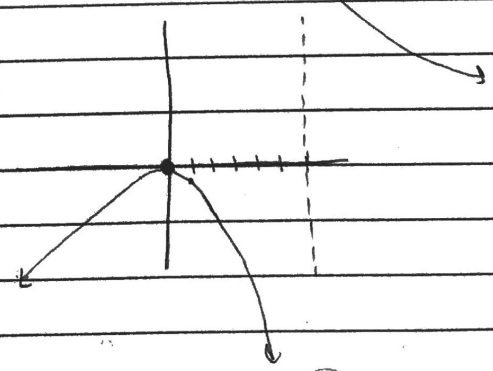
28. $\frac{x^2}{x-6} \geq 0$

VA: $x=6$

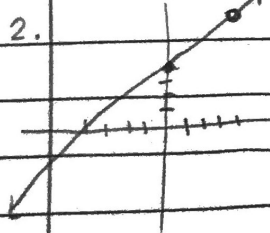
HA: none

x-int: $(0,0)$

$x=0, x > 6$

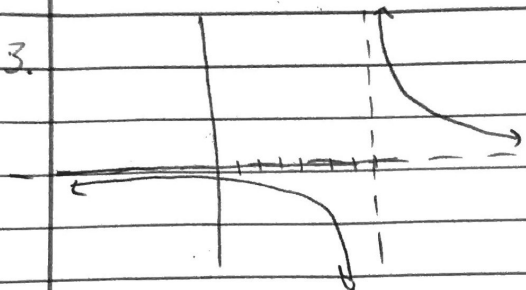


1. $\sqrt{0+4} - 8 = -6$



$\frac{(x-4)(x+4)}{x-4} \lim_{x \rightarrow 4} \frac{x^2-16}{x-4} = 8$

3.



$$\lim_{x \rightarrow 7} \frac{6}{x-7} = \text{DNE}$$

$$4. \lim_{x \rightarrow \infty} x^3 + 5x^2 - 2x + 21 = \infty$$

$$5. a) \frac{100x + 7105}{x}$$

HA: $y = 100$

$$\lim_{x \rightarrow \infty} c(x) = 100$$

b) As the # of personal digital assistants increases the average cost will level out to \$100.

$$6. \frac{(5)^2}{\sqrt{5-4}} - 2 = \frac{25}{1-2} = -25$$

$$\begin{array}{r} 81 \\ \times 9 \\ \hline 729 \\ 729 \\ \hline 1458 \end{array}$$

$$7. 2(9)^3 - 12(9) + 3$$

$$1458 - 108 + 3$$

$$1350 + 3$$

$$1353$$

$$8. a) y\text{-int: } 4 \text{ students}$$

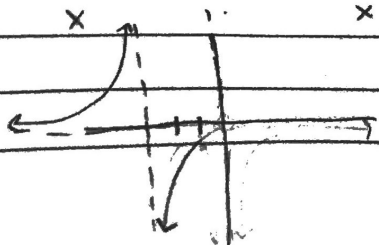
$$b) \lim_{x \rightarrow \infty} S(t) = \frac{2000}{50} = 40 \text{ students (HA: } y = \frac{2000}{50} = 40)$$

$$9. \lim_{x \rightarrow \infty} (x^2 - 7x + 2) = \infty$$

$$10. \lim_{x \rightarrow \infty} (2x^3 - 8x^2 - 5) = \infty$$

$$11. \lim_{x \rightarrow \infty} \frac{2x^3 - x - 1}{-x^4 + 7x^3 + 4} = 0 \quad (\text{HA: } y = 0)$$

$$13. \frac{1}{x+3} - \frac{1}{3} \cdot \frac{x+3}{x+3} = \frac{3-x-3}{3(x+3)} = \frac{-x}{3(x+3)} = \frac{-x}{3x(x+3)} = \frac{-1}{3(x+3)}$$



$$\text{VA: } x = -3$$

$$\text{hole: } x = 0$$

$\frac{-1}{3(0+3)} = \frac{-1}{9}$

(A)