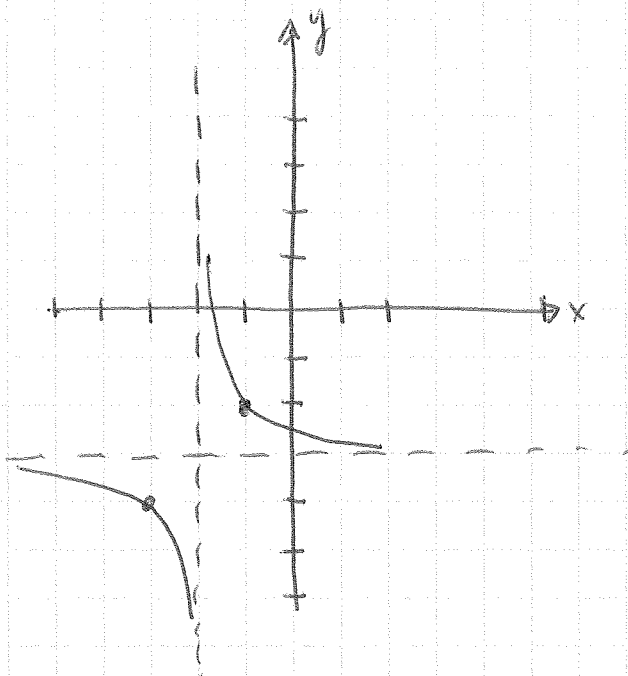


$$\textcircled{1} f(x) = \frac{1}{x+2} - 3$$

parent function: $y = \frac{1}{x}$

Transformation: left 2, down 3 ... or $(x,y) \rightarrow (x-2, y-3)$

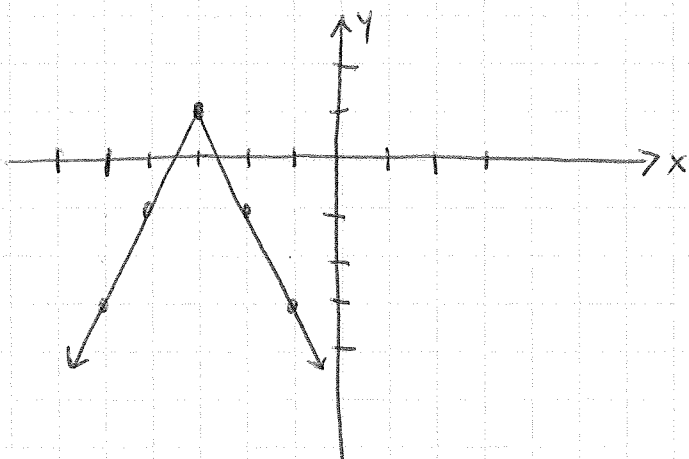


Be sure to graph the
VA & HA

$$\textcircled{2} f(x) = -2|x+3| + 1$$

parent function: $y = |x|$

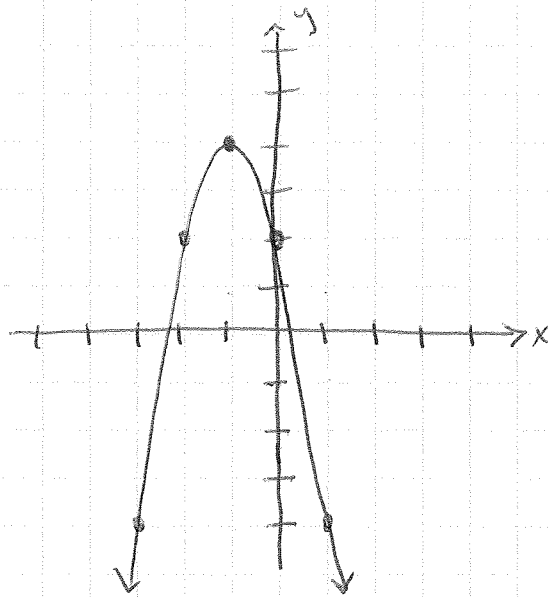
Transformation: Reflect over x-axis
vertically stretch by a factor of 2
Left 3
Up 1



③ $f(x) = -2(x+1)^2 + 4$

parent function: $y = x^2$

Transformation: Reflect over x -axis
 Vertically stretched by a factor of 2
 Left 1
 Up 4



④ $f(x) = x^2 + 8x + 11$ to use transformation rules, write in vertex form...

vertex: $x\text{-value} = -b/2a$

$$x = -8/2(1) = -4$$

$$y = (-4)^2 + 8(-4) + 11$$

$$y = 16 - 32 + 11$$

$$y = -5$$

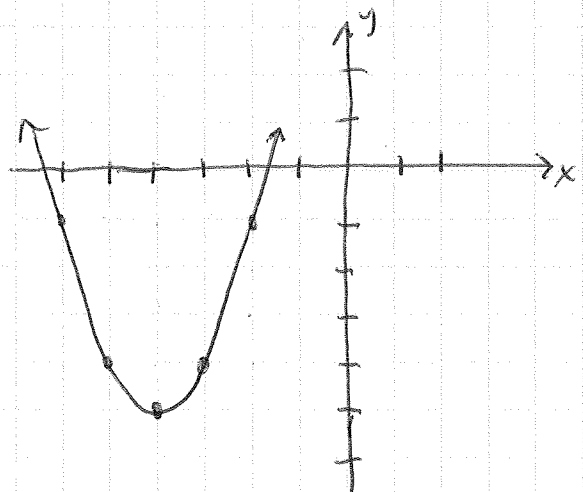
$$\text{vertex} = (-4, -5)$$

vertex form: use same "a" value

$$y = (x+4)^2 - 5$$

parent function: $y = x^2$

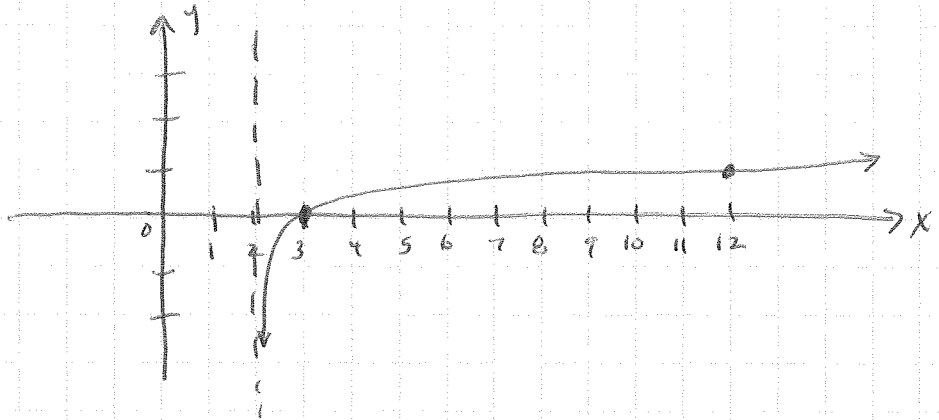
Transformation: Left 4, Down 5



⑤ $f(x) = \log(x-2)$

parent function: $y = \log x$

Transformation: Right 2

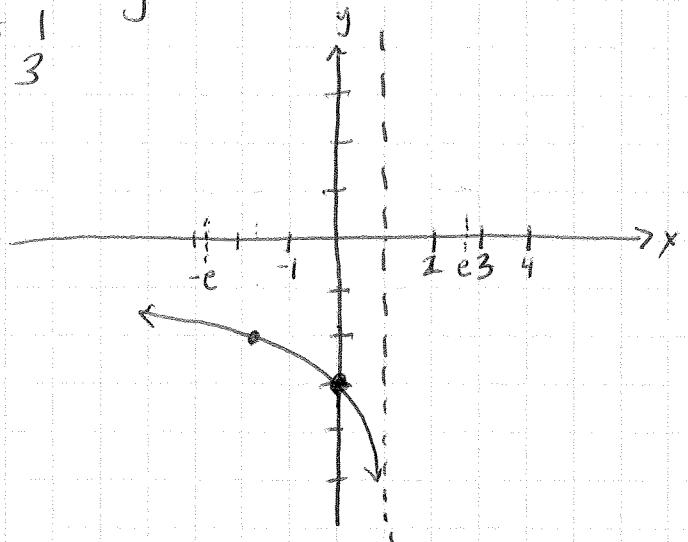


⑥ $f(x) = \ln(1-x) - 3$

Parent function: $y = \ln x$

Transformation: REWRITE $f(x) = \ln(-x+1) - 3$
 $f(x) = \ln(-(x-1)) - 3$

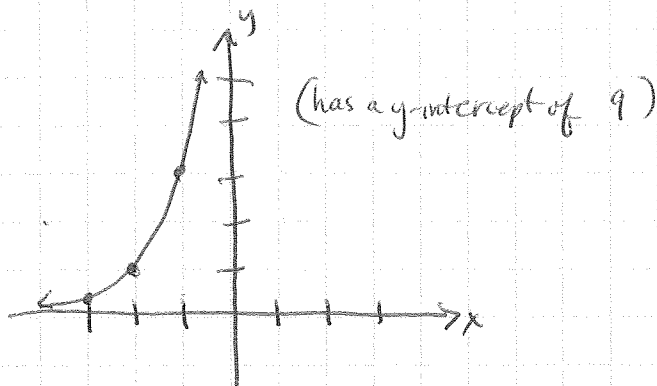
Reflect over y-axis
Right 1
Down 3



⑦ $f(x) = 3^{x+2}$

Parent Function: $y = 3^x$

Transformation: Left 2



$$\textcircled{8} \quad 2(5-2y) - 3(1-y) \geq y+1$$

$$10 - 4y - 3 + 3y \geq y+1$$

$$7 - y \geq y+1$$

$$6 \geq 2y$$

$$\boxed{\begin{array}{l} 3 \geq y \\ (-\infty, 3] \end{array}}$$

$$\textcircled{9} \quad \frac{x-2}{3} + \frac{x+5}{2} = \frac{1}{3} \quad \text{LCD} = 6$$

$$6 \left(\frac{x-2}{3} + \frac{x+5}{2} = \frac{1}{3} \right)$$

$$2(x-2) + 3(x+5) = 2$$

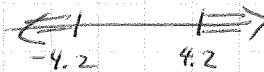
$$2x - 4 + 3x + 15 = 2$$

$$5x + 11 = 2$$

$$5x = -9$$

$$\boxed{x = -\frac{9}{5}}$$

$$\textcircled{10} \quad |2x-5| > 4.2$$



$$2x-5 < -4.2 \quad \text{OR} \quad 2x-5 > 4.2$$

$$2x < .8$$

$$2x > 9.2$$

$$x < .4$$

OR

$$x > 4.6$$

$$(-\infty, .4) \cup (4.6, \infty)$$

$$\textcircled{11} \quad |-x + 4| - 3 \leq 7$$

$$|-x + 4| \leq 10$$

$$-10 \leq -x + 4 \leq 10$$

$$-14 \leq -x \leq 6$$

$$\boxed{14 \geq x \geq -6}$$
$$\boxed{[-6, 14]}$$

$$\textcircled{12} \quad \frac{3x}{x+1} + \frac{5}{x-2} = \frac{15}{x^2 - x - 2}$$

$$\left[\frac{3x}{x+1} + \frac{5}{x-2} = \frac{15}{(x-2)(x+1)} \right] \quad (x-2)(x+1) \text{ LCD} = (x-2)(x+1)$$

$$3(x-2) + 5(x+1) = 15$$

$$3x^2 - 6x + 5x + 5 = 15$$

$$\begin{aligned} 3x^2 - 6x + 5x + 5 &= 15 \\ 3x^2 - x + 5 &= 15 \\ 3x^2 - x - 10 &= 0 \\ (3x+5)(x-2) &= 0 \\ x = -5/3 \quad x = 2 \end{aligned}$$

$$3x^2 - x - 10 = 0$$

$$(3x+5)(x-2) = 0$$

$$x = -5/3 \quad x = 2$$

BUT...

$x \neq 2$ since that would make 2 of the original fractions undefined.

EXTRANEUS!

~~there are no solutions!~~

∴ $x = -5/3$ only

$$(13) \quad 4x^2 - 7x + 5 = 0$$

$$x = \frac{7 \pm \sqrt{49 - 4(4)(5)}}{2(4)}$$

$$x = \frac{7 \pm \sqrt{49 - 80}}{8}$$

$$x = \frac{7 \pm \sqrt{-31}}{8}$$

no real solutions...

$$x = \frac{7}{8} \pm \frac{\sqrt{31}}{8} i$$

$$(14) \quad -3 \leq 1 - 2x < 7$$

$$-4 \leq -2x < 6$$

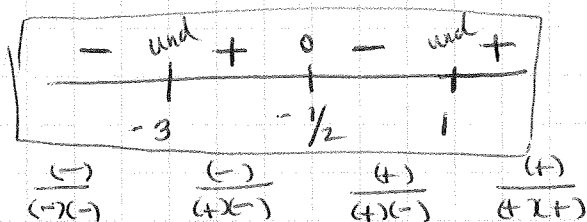
$$2 \geq x > -3$$

$$(-3, 2]$$

$$(15) \quad \frac{2x+1}{(x+3)(x-1)} \leq 0$$

$x = -\frac{1}{2}$ makes the numerator = 0

$x = -3$ & $x = 1$ make the denominator = 0

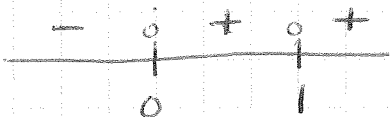


$$(-\infty, -3) \cup [-\frac{1}{2}, 1)$$

$$(16) \quad x^3 - 2x^2 + x \geq 0$$

$$x(x^2 - 2x + 1) \geq 0$$

$$x(x-1)(x-1) \geq 0$$



$$[0, 1] \cup [1, \infty)$$

since 1 is included on both sides a better solution is

$$\boxed{[0, \infty)}$$

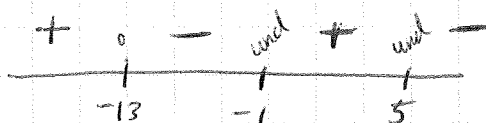
$$(17) \quad \frac{2}{x+1} - \frac{3}{x-5} > 0$$

$$\frac{2(x-5)}{(x+1)(x-5)} - \frac{3(x+1)}{(x+1)(x-5)} > 0$$

$$\frac{2x-10-3x-3}{(x+1)(x-5)} > 0$$

$$\frac{-x-13}{(x+1)(x-5)} > 0$$

equation = 0 when $x = -13$
equation is undefined when $x = -1$ & $x = 5$



$$\boxed{(-\infty, -13) \cup (-1, 5)}$$

$$(18) \quad \frac{(uv^{-2})^{-3}}{u^{-5}v^2} = \frac{u^{-3}v^6}{u^{-5}v^2} = \frac{u^5v^6}{u^3v^2} = \boxed{u^2v^4}$$

$$(19) \quad \frac{4a^3b}{a^2b^3} \cdot \frac{3b^2}{2a^2b^4} = \frac{12a^3b^3}{2a^4b^7} = \boxed{\frac{6}{ab^4}}$$

(20) Given the line $5x - y = 7$, solve for y ...

~~the~~ $-y = 7 - 5x$

$$y = -7 + 5x \dots \text{the slope of this line} = 5$$

~~is parallel~~

a) Parallel means same slope \therefore Slope = 5
Point = (3, -4)

$$y + 4 = 5(x - 3)$$

$$y + 4 = 5x - 15$$

$$\boxed{-5x + y + 19 = 0}$$

b) Perpendicular means Slope = $-\frac{1}{5}$

$$y + 4 = -\frac{1}{5}(x - 3)$$

$$y + 4 = -\frac{1}{5}x + \frac{3}{5}$$

$$5(y + 4) = -\frac{1}{5}x + \frac{3}{5}$$

$$5y + 20 = -x + 3$$

$$\boxed{x + 5y + 17 = 0}$$

$$(21) f(x) = \sqrt{x^2 + 3}$$

Inside a square must ALWAYS be positive

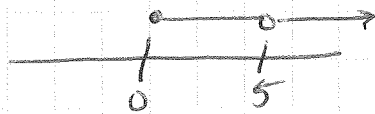
No matter what x you plug in, $x^2 + 3$ is ALWAYS positive.

$$\therefore \text{Domain} = \mathbb{R}$$

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

$$(22) f(x) = \frac{\sqrt{x}}{x-5}$$

No "0" in the denominator, so $x \neq 5$
No "negatives" inside a $\sqrt{\quad}$, so $x \geq 0$



$$\boxed{[0, 5) \cup (5, \infty)}$$

$$(23) f(x) = 3x^3 - 2x$$

To prove odd or even, Plug in " $-x$ "

$$f(-x) = 3(-x)^3 - 2(-x)$$

$$f(-x) = 3(-x^3) - 2(-x)$$

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

$$f(-x) = -f(x) \therefore f(x) \text{ is odd}$$

$$(24) f(x) = -2x^4 - 4x + 7$$

$$f(-x) = -2(-x)^4 - 4(-x) + 7$$

$$f(-x) = -2x^4 + 4x + 7$$

Since $f(-x) \neq f(x)$ & $f(-x) \neq -f(x)$, $f(x)$ is Neither

$$\begin{aligned}
 (25) \quad (f \circ h)(4) &= f(h(4)) \\
 &= f(\sqrt{4+5}) \\
 &= f(3) \\
 &= (3-4)^2 \\
 &= (-1)^2 \\
 &= 1
 \end{aligned}$$

$$\begin{aligned}
 (26) \quad g(f(x)) &= g((x-4)^2) \\
 &= 2(x-4)^2 - 3 \\
 &= 2(x^2 - 8x + 16) - 3 \\
 &= 2x^2 - 16x + 32 - 3 \\
 &= 2x^2 - 16x + 29
 \end{aligned}$$

$$\begin{aligned}
 (27) \quad f+g &= (x-4)^2 + (2x-3) \\
 &= x^2 - 8x + 16 + 2x - 3 \\
 &= x^2 - 6x + 13
 \end{aligned}$$

$$\begin{aligned}
 (28) \quad fg &= (x-4)^2(2x-3) \\
 &= (x^2 - 8x + 16)(2x-3) \\
 &= 2x^3 - 3x^2 - 16x^2 + 24x \\
 &\quad + 32x - 48
 \end{aligned}$$

$$= 2x^3 - 19x^2 + 56x - 48$$

$$(29) \quad f(x) = x^3 + 2$$

$$y = x^3 + 2$$

$$\text{switch } x \text{ \& } y \Rightarrow x = y^3 + 2$$

$$x - 2 = y^3$$

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

$$\sqrt[3]{x-2} = f^{-1}(x)$$

30) Show $f(g(x)) = x$ & $g(f(x)) = x$

$$f(g(x)) = f\left(\frac{x-8}{2}\right) = 2\left(\frac{x-8}{2}\right) + 8$$

$$= x - 8 + 8$$

$$= x$$

$$g(f(x)) = g(2x+8) = \frac{(2x+8)-8}{2}$$

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

$$= x$$

DO 1
STEP @
A TIME!

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

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

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

$$f(x) = (3x + 5)(x - 1) = 0$$

when $3x + 5 = 0$

$$3x = -5$$

$$\boxed{x = -5/3}$$

OR $x - 1 = 0$

$$\boxed{x = 1}$$

34) $f(x) = x^3 - 36x$

$$f(x) = x(x^2 - 36) = x(x+6)(x-6) = 0 \text{ when}$$

$$\boxed{x = 0 \quad x = -6 \quad \text{or} \quad x = 6}$$

(35) $f(x) = x^3 - x^2 - x - 2$

$x=2$ is a zero (given)

$$\begin{array}{r|rrrr} 2 & 1 & -1 & -1 & -2 \\ & & 2 & 2 & 2 \\ \hline & 1 & 1 & 1 & 0 \end{array}$$

$x^2 + x + 1 = 0$

$$x = \frac{-1 \pm \sqrt{1 - 4(1)(1)}}{2(1)} = \frac{-1 \pm \sqrt{-3}}{2} = \frac{-1 \pm i\sqrt{3}}{2}$$

Zeros $x = 2, x = \frac{-1 \pm i\sqrt{3}}{2}$

Factors $(x-2)(x^2+x+1)$

an irreducible quadratic factor

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

given $x=1$ & $x=-4$ are zeros

$$\begin{array}{r|rrrrr} 1 & 1 & 3 & -3 & 3 & -4 \\ & & 1 & 4 & 1 & 4 \\ \hline -4 & 1 & 4 & 1 & 4 & 0 \\ & & -4 & 0 & -4 & \\ \hline & 1 & 0 & 1 & 0 & \end{array}$$

$x^2 + 1 = 0$

$x^2 = -1$

$x = \pm i$

Zeros $x = 1, x = -4, x = \pm i$

Factors $(x-1)(x+4)(x^2+1)$

$$\textcircled{37} \quad g(x) = \frac{4x-5}{x-3}$$

a) VA: $x=3$ (makes denominator = 0)
HA: $y=4$ end behavior model = $\frac{4x}{x} = 4$

b) x-intercept: $0 = 4x - 5$
 $5 = 4x$
 $\frac{5}{4} = x$

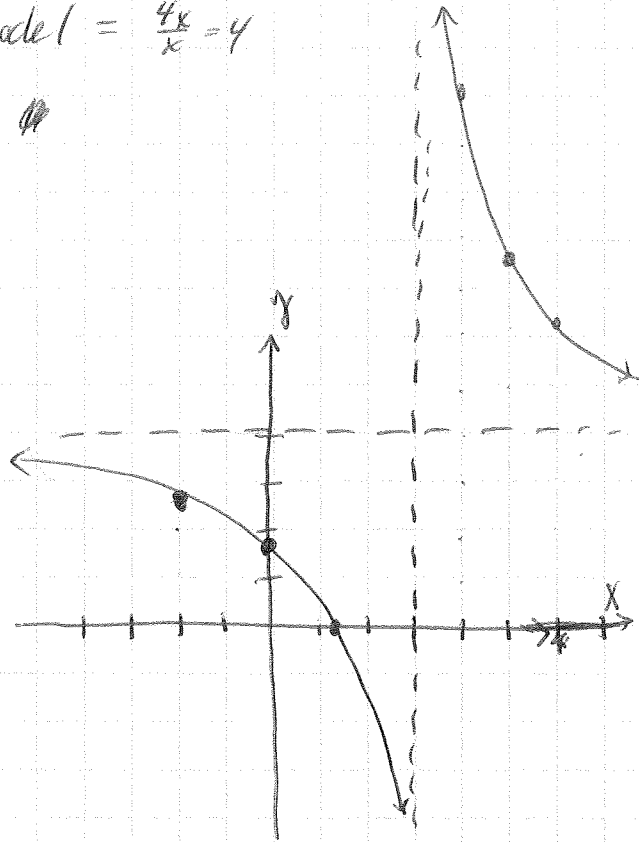
$$\boxed{\left(\frac{5}{4}, 0\right)}$$

y-intercept: $y = \frac{0-5}{0-3} = \frac{5}{3}$

$$\left(0, \frac{5}{3}\right)$$

c) Domain: $(-\infty, 3) \cup (3, \infty)$

x	y
-2	$\frac{13}{5}$
4	11
5	$\frac{15}{2}$
6	$\frac{19}{3}$



$$(38) \quad g(x) = \frac{2x^2}{x^2 - x - 6} = \frac{2x^2}{(x-3)(x+2)}$$

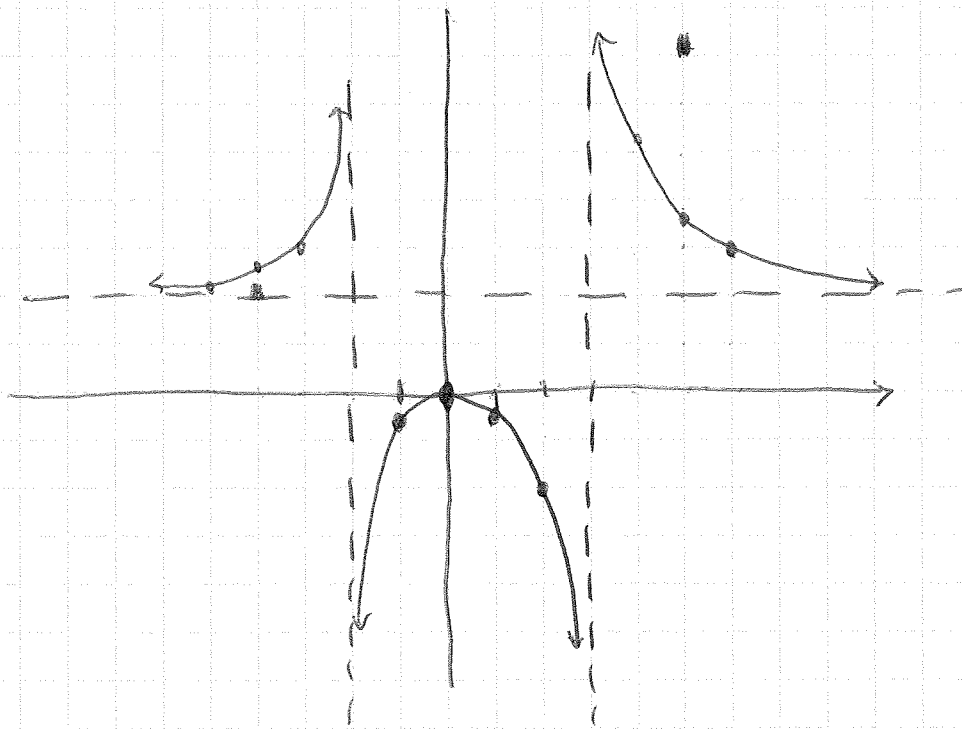
a) VA: $x=3$ and $x=-2$

HA: $y=2$

b) x-int: $0 = 2x^2$
 $0 = x \quad (0,0)$

y-int: $(0,0)$ also

c) Domain: $(-\infty, -2) \cup (-2, 3) \cup (3, \infty)$



x	y	g(x)
-1	-1/2	$\frac{2}{(-1)(-2)}$
2	-2	$\frac{8}{(-1)(4)}$
1	-1/3	$\frac{2}{(-2)(3)}$
4	10/3	$\frac{32}{(1)(16)}$
5	25/12	$\frac{50}{(2)(12)}$
6	3	$\frac{72}{(3)(12)}$
-3	3	$\frac{18}{(-6)(-6)}$
-4	10/3	$\frac{32}{(-6)(-6)}$
-5	25/12	$\frac{50}{(-12)(-6)}$

39) a) $\log_{11} 11^4 = 4$

b) $\log_5 1 = 0$

c) $\ln e^{-1} = \ln e^{-1} = -1$

d) $\log \sqrt[4]{10} = \log 10^{1/4} = 1/4$

e) $\log_9 \frac{1}{27} = x$

f) $3^{\log_3 7} = 7$

$$9^x = \frac{1}{27}$$

$$3^{2x} = 3^{-3}$$

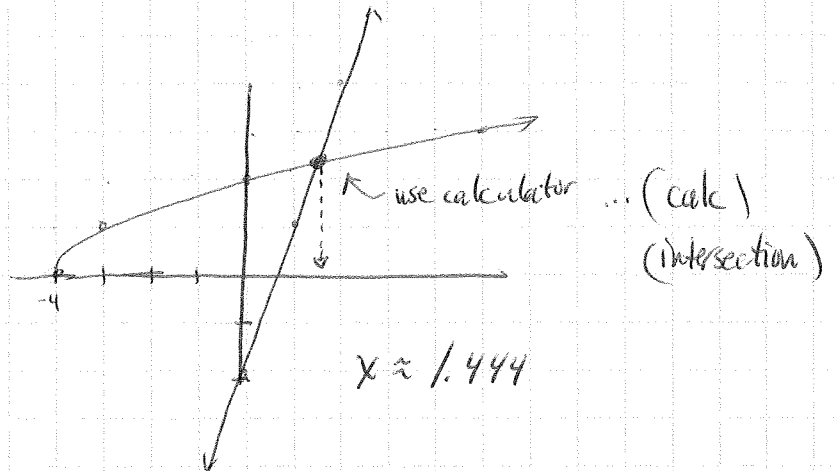
$$2x = -3$$

$$x = \boxed{-3/2}$$

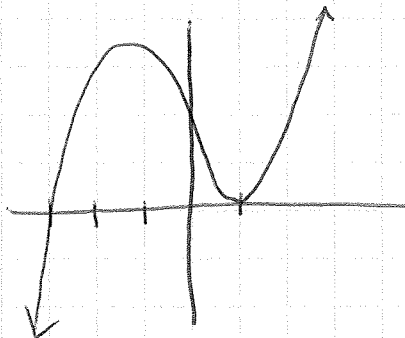
40) $3x - 2 = \sqrt{x+4}$

$$y_1 = 3x - 2$$

$$y_2 = \sqrt{x+4}$$



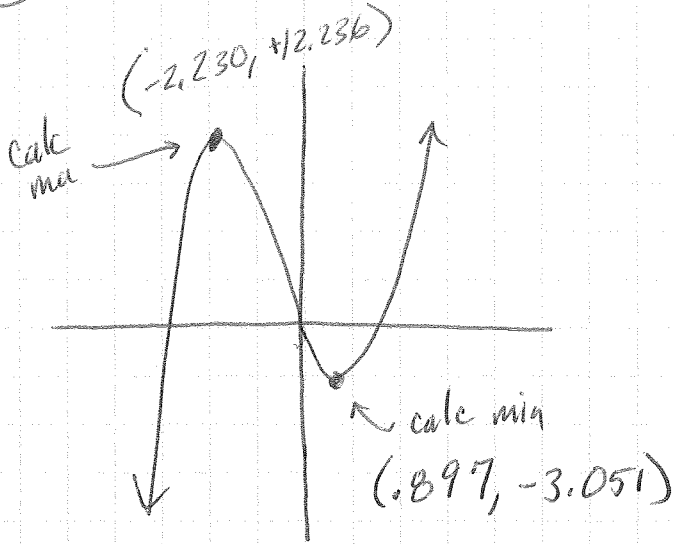
41) $0 = x^3 + x^2 - 5x + 3$



calc zeros ...

$$\boxed{\begin{array}{l} x = 1 \\ x = -3 \end{array}}$$

(42) $f(x) = x^3 + 2x^2 - 6x$

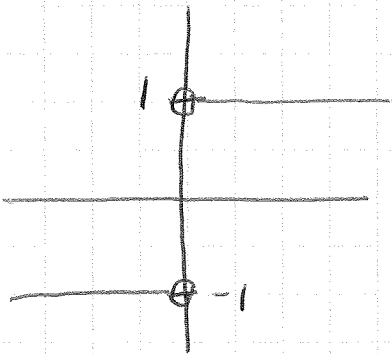


a) Local max = 12.236
Local min = -3.051

b) Increasing on
 $(-\infty, -2.230) \cup (0.897, \infty)$

decreasing on
 $(-2.230, 0.897)$

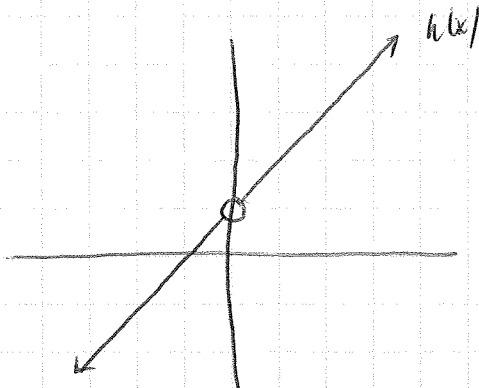
(43) $f(x) = \frac{|x|}{x}$



non removable discontinuity at $x=0$

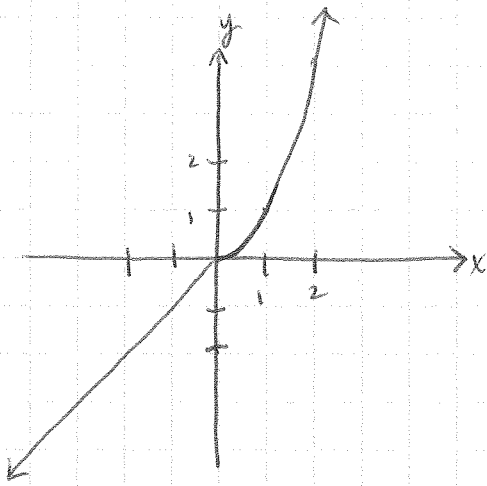
(44) $h(x) = \frac{x^2+x}{x} = \frac{x(x+1)}{x} = x+1$

But with a hole
when $x=0$
 $(0, 1)$



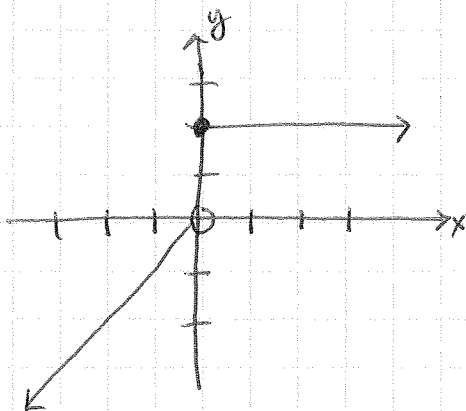
Removable Discontinuity at $x=0$

45) $f(x) = \begin{cases} x & \text{if } x \leq 0 \\ x^2 & \text{if } x > 0 \end{cases}$



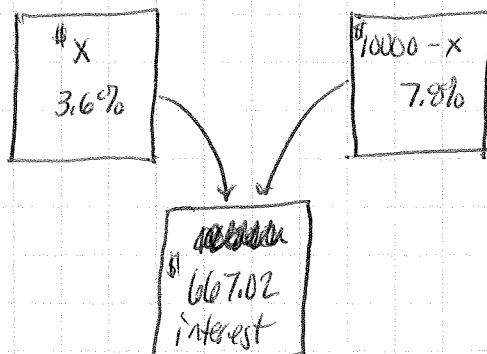
Continuous at $x=0$

46) $f(x) = \begin{cases} -|x| & \text{if } x < 0 \\ 2 & \text{if } x \geq 0 \end{cases}$



Not continuous at $x=0$

47)



$$.036x + .078(10000 - x) = 667.02$$

$$.036x + 780 - .078x = 667.02$$

$$-.042x = -112.98$$

$$x = 2690$$

\$2690 @ 3.6%
\$7,310 @ 7.8%

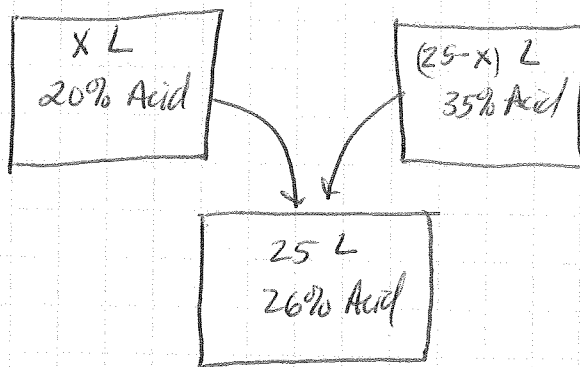
(48) $x =$ salary before ~~increase~~ decrease

" a 3.5% pay decrease means he ~~now~~
now gets 96.5% of his salary before "

$$.965x = 27985$$

$$x = \$29000$$

(49)



$$.2x + .35(25-x) = .26(25)$$

$$.2x + 8.75 - .35x = 6.5$$

$$-.15x = -2.25$$

$$x = 15$$

15 L of 20% Acid
mixed with
10 L of 35% Acid

(50) $f(-3) = -2$ Points $(-3, -2)$ & $(4, -8)$

$$f(4) = -8$$

$$m = \frac{-2 + 8}{-3 - 4} = \frac{6}{-7}$$

$$y + 2 = -\frac{6}{7}(x + 3)$$

$$7. \left(y + 2 = -\frac{6}{7}x - \frac{18}{7} \right)$$

$$7y + 14 = -6x - 18$$

$$6x + 7y + 32 = 0$$

51) $R = \text{Resistance}$
 $L = \text{Length}$
 $D = \text{diameter of wire}$

$$R = \frac{k \cdot L}{D^2}$$

~~if~~
 if $L = 50$, $D = 3$, & $R = 8$

$$8 = \frac{k \cdot 50}{3^2}$$

$$72 = 50k$$

$$1.44 = k$$

$$R = \frac{1.44L}{D^2} \quad \text{if } L = 40 \text{ \& } D = 4, \text{ find } R$$

$$R = \frac{1.44(40)}{4^2} = \boxed{3.6}$$

52) a) $y = 231.2039179 x^{-.2968764553}$

b) "Put in y_1 " $y_1(12) = \boxed{110.5634766}$

53)

$$\begin{array}{r}
 3x^2 - 4x + 2 \\
 2x+1 \overline{) 6x^3 - 5x^2 + 0x + 9} \\
 \underline{-(6x^3 + 3x^2)} \\
 -8x^2 + 0x \\
 \underline{-(-8x^2 - 4x)} \\
 4x + 9 \\
 \underline{-(4x + 2)} \\
 7
 \end{array}$$

$$\frac{6x^3 - 5x^2 + 9}{2x+1} = 3x^2 - 4x + 2 + \frac{7}{2x+1}$$

$$(2x+1)(3x^2 - 4x + 2) + 7 = 6x^3 - 5x^2 + 9$$

(2x+1) Not a factor of $6x^3 - 5x^2 + 9$ since remainder $\neq 0$.

$$\begin{array}{r|rrrr} 5 & 1 & -4 & -7 & 10 \\ & & 5 & 5 & -10 \\ \hline & 1 & 1 & -2 & 0 \end{array}$$

0 since remainder = 0

$(x-5)$ is a factor of

$$x^3 - 4x^2 - 7x + 10$$

$$\frac{x^3 - 4x^2 - 7x + 10}{x - 5} = x^2 + x - 2$$

OR

$$x^3 - 4x^2 - 7x + 10 = (x^2 + x - 2)(x - 5)$$

55) if $x = 1/3$ is a zero, & leading coefficient is not given, use the following factors

~~$$y = (3x - 1)(x + 2)(x - 5)$$~~

$$y = (3x^2 + 6x - x - 2)(x - 5)$$

$$y = (3x^2 + 5x - 2)(x - 5)$$

$$y = 3x^3 - 15x^2 + 5x^2 - 25x - 2x + 10$$

$$y = 3x^3 - 10x^2 - 27x + 10$$

56
a) Since $x = 2 - i$ is a zero, so is $x = 2 + i$

$$(x+1)(x-(2-i))(x-(2+i))$$

$$(x+1)(x-2+i)(x-2-i)$$

$$(x+1)((x-2)+i)((x-2)-i)$$

$$(x+1)((x-2)^2 + 1)$$

$$(x+1)(x^2 - 4x + 4 + 1)$$

$$(x+1)(x^2 - 4x + 5)$$

$$x^3 - 4x^2 + 5x + x^2 - 4x + 5$$

$$\boxed{x^3 - 3x^2 + x + 5}$$

b) Since $4i$ is a zero so is $-4i$

$$(x-3)(x+4i)(x-4i)$$

$$(x-3)(x^2 + 16)$$

$$x^3 + 16x - 3x^2 - 48$$

$$\boxed{x^3 - 3x^2 + 16x - 48}$$

$$\begin{aligned}
 (57) \quad \frac{(2+4i)}{(3-2i)} \cdot \frac{(3+2i)}{(3+2i)} &= \frac{6+4i+12i+8i^2}{9+4} \\
 &= \frac{-2+16i}{13} = \boxed{-\frac{2}{13} + \frac{16}{13}i}
 \end{aligned}$$

$$\begin{aligned}
 (58) \quad 200 &= 100 \left(1 + \frac{.035}{12}\right)^{12t} \\
 &\quad t = \text{years} \\
 2 &= \left(1.002916667\right)^{12t}
 \end{aligned}$$

$$\log_{1.002916667}(2) = 12t$$

$$\frac{\log 2}{\log(1.002916667)} = 12t$$

$$19.833 \approx t$$

$$\approx 19.833 \text{ years}$$

OR

$$\begin{aligned}
 200 &= 100 \left(1 + \frac{.035}{12}\right)^x \\
 &\quad x = \# \text{ of months}
 \end{aligned}$$

$$2 = \left(1.002916667\right)^x$$

$$x \approx 237.9968401$$

months

GRAPHICALLY

$$\begin{aligned}
 \text{Graph } Y_1 &= 200 \\
 Y_2 &= 100 \left(1 + \frac{.035}{12}\right)^{12x}
 \end{aligned}$$

Solve for intersection

$$(59) \quad y = 50 (.97)^x$$

$$25 = 50 (.97)^x$$

$$.5 = (.97)^x$$

$$\log_{.97} (.5) = x$$

$$\frac{\log (.5)}{\log (.97)} = x$$

$$22.75657306 = x$$

$$\boxed{\approx 22.757 \text{ days}}$$

$$(60) \text{ a) } 3000 \left(1 + \frac{.065}{52}\right)^{52 \cdot 3} \approx \$3,645.49$$

$$\text{b) } ~~3000~~ 3000 e^{(.065)(3)} \approx \$3,645.93$$

$$(61) \text{ a) } \log_3 a^2 + \log_3 b = 2\log_3 a + \log_3 b$$

$$\text{b) } \log_3 \frac{a^{1/2}}{bc} = \log_3 a^{1/2} - \log_3 (bc)$$

$$= \frac{1}{2}\log_3 a - (\log_3 b + \log_3 c)$$

$$\boxed{= \frac{1}{2}\log_3 a - \log_3 b - \log_3 c}$$

$$(62) \text{ a) } 2\log r - \log q + 3\log w = \log r^2 - \log q + \log w^3$$

$$= \boxed{\log \left(\frac{r^2 w^3}{q}\right)}$$

$$\text{b) } \frac{1}{3}\log 27 - 2\log 4 = \log 27^{1/3} - \log 4^2 = \boxed{\log \left(\frac{3}{16}\right)}$$

$$(63) \quad 2(5)^x = 26$$

$$5^x = 13$$

$$\log_5 13 = x$$

$$\frac{\log 13}{\log 5} = x$$

$$1.593692641 = x$$

$$\boxed{x \approx 1.594}$$

$$(64) \quad \log x = -2$$

$$10^{-2} = x$$

$$\boxed{\frac{1}{100} = x}$$

$$(65) \quad 2e^x = 3.4$$

$$e^x = 1.7$$

$$\ln(1.7) = x$$

$$.5306282511 = x$$

$$\boxed{x \approx .531}$$

$$(66) \quad \log_3(2-3x) + 5 = 9$$

$$\log_3(2-3x) = 4$$

$$3^4 = 2-3x$$

$$81 = 2-3x$$

$$79 = -3x$$

$$\boxed{-\frac{79}{3} = x}$$

$$(67) \quad \log(x^2+21x) = 2$$

$$10^2 = x^2+21x$$

$$0 = x^2+21x-100$$

$$0 = (x-4)(x+25)$$

$$\boxed{x = 4 \text{ or } x = -25}$$

$$(68) \quad \log_2(x-1) - \log_2(2x+3) = 3$$

$$\log_2\left(\frac{x-1}{2x+3}\right) = 3$$

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

$$8 = \frac{x-1}{2x+3}$$

$$8(2x+3) = x-1$$

$$16x+24 = x-1$$

$$15x = -25$$

$$x = \frac{-25}{15} = -\frac{5}{3}$$

BUT... $x \neq -5/3$ since it makes the inside of $\log_2(x-1) < 0$ **NO SOLUTION!**