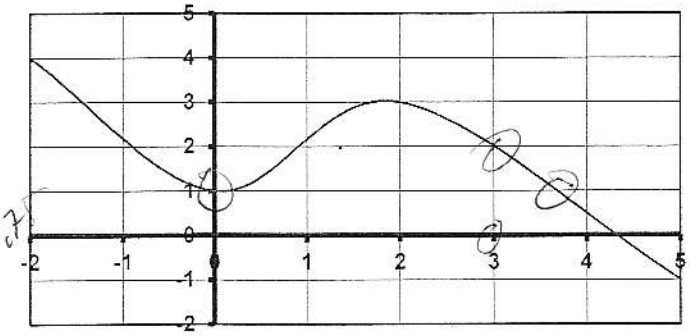
Practice Exam 1 Review This is NOT intended to be comprehensive!

1) Below is shown the graph of $f(x)$
   a) Evaluate $f(3)$
   b) Solve $f(x) = 1$



$f(3) = 2$

(b) what is "x" when $y = 1$ $x = 0$ and $x \approx 3.7$

2) Suppose the function $A(t)$ gives the height of an airplane (in feet) t minutes after takeoff.
   a) Interpret $A(5)$
   b) Suppose you solve $A(t) = 300$. What is the meaning of your solution?

other Pts

3) Given the function $f(x)$ defined by the table below,

x	1	2	3	4	5	6	7	8
$f(x)$	2	4	5	6	5	3	-2	-1
$g(x)$	8	1	3	2	7	6	4	5

   a) Evaluate $f(6)$
   b) Solve $f(x) = 4$
   c) Evaluate $g^{-1}(7)$
   d) Evaluate $f(g(7))$
   e) Evaluate $g(f(1))$

4) Suppose the following table shows the cost of a latte, in dollars, as a function of the size of the latte, in ounces.

s	8	12	16	20
$C(s)$	2.0	2.5	3.0	3.5

   a) Evaluate $C(12)$ and give its meaning in practical terms
   b) Solve $C(s) = 3.0$ and give its meaning in practical terms

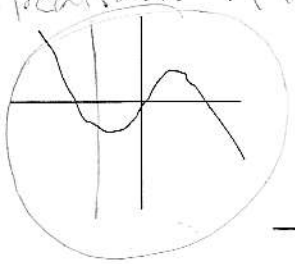
5) Circle all of the following that represent functions

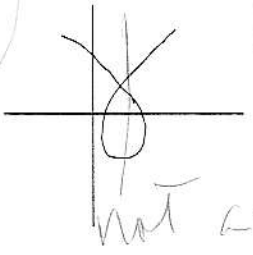
x repeated $f(4) = 3, 5$

in	1	4	6	4
out	2	5	6	1

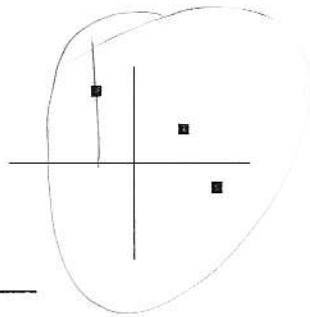
in	2	3	5	4
out	3	5	6	5

in	2	4	6	7
out	5	7	6	4





not a function



(2) (a) The ht of the airplane 5 min. after take off

(b) The times when the plane is 300 ft up
↓
minutes after take off

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(3) $f(6) = 3$

$F(x) = 4 \quad x = 2$

$g^{-1}(7) = g(x) = 7 \text{ @ } x = 5$

$f(g(7)) \quad g(7) = 4 \quad f(4) = 6$

$g(F(1)) \quad F(1) = 2 \quad g(2) = 1$

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(4) (a) The cost of a 12 oz latte

(b) $S = 16$ oz This is how much a 16 oz latte costs ($3.00)

Sounds cheap to me!

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(5) See Paper

6) Given $f(x) = \dfrac{-2}{x+4}$

a) Evaluate $f(3)$

b) Evaluate $f^{-1}(6)$

c) State the domain of $f(x)$

d) Evaluate $f(c - 1)$

e) Given $g(x) = x^2 - 1$, find $f(g(x))$

next pg

7) Find the domain of the following functions

a) $h(t) = \sqrt{3 - 2t} + 1$

b) $g(x) = \dfrac{x-3}{x-5}$

8) Determine the domain and range of the following function and sketch its graph

$$f(x) = \begin{cases} -3 & x < -1 \\ 3x & -1 \le x \le 1 \\ 3 & x > 1 \end{cases}$$

9) Given a function $f(x)$, represent the following in function notation

a) $f(x)$ shifted 3 units to the left $F(x+3)$

b) $f(x)$ flipped over the y axis $F(-x)$

c) $f(x)$ stretched horizontally by a factor of 2 $F\left(\frac{1}{2}x\right)$

d) $f(x)$ compresses vertically by a factor of 1/2 $\frac{1}{2}F(x)$

e) $f(x)$ compressed horizontally by a factor of 1/2 $F(2x)$

f) $f(x)$ stretched vertically by a factor of 2 $2F(x)$

g) $f(x)$ shifted down 2 units $F(x) - 2$

h) $f(x)$ shifted right 5 units $F(x-5)$

i) $f(x)$ flipped over the x-axis $-F(x)$

6 (a) $F(3) = \frac{-2}{3+4} \rightarrow \frac{-2}{7}$

(b) $F(x) = 6$ $\quad \frac{6}{1} = \frac{-2}{x+4}$ aproporting

$6(x+4) = -2$

$6x + 24 = -2$

$6x = -26$

$x = -\frac{26}{6}$ or $-\frac{13}{3}$

(c) $x \neq -4$

or

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

(d) $F(c-1) = \frac{-2}{c-1+4} \rightarrow \frac{-2}{c+3}$

(e) $F(x^2-1)$ $\quad \frac{-2}{x^2-1+4} \rightarrow \frac{-2}{x^2+3}$

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7 (a) $3 - 2r \geq 0$

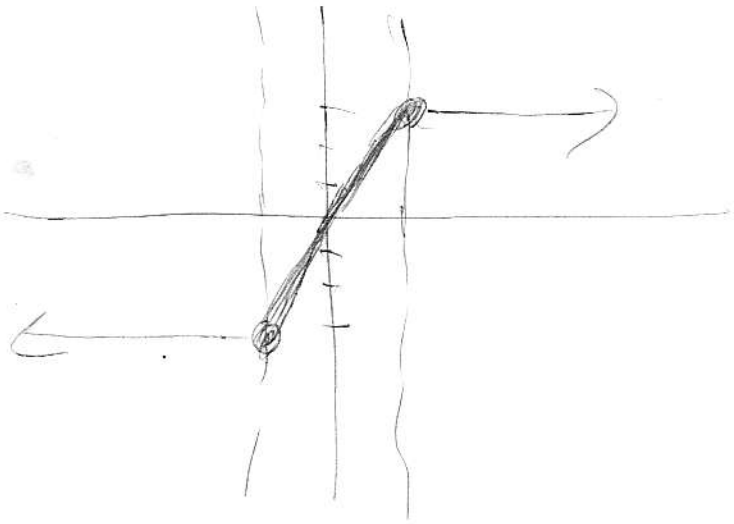
$r \leq 3/2$ or $(-\infty, \frac{3}{2}]$

(b) $x - 5 = 0$

$x \neq 5$ or $(-\infty, 5) \cup (5, \infty)$

(8) Range $[3, \infty)$

Domain all reals



$3x + 0$

↑

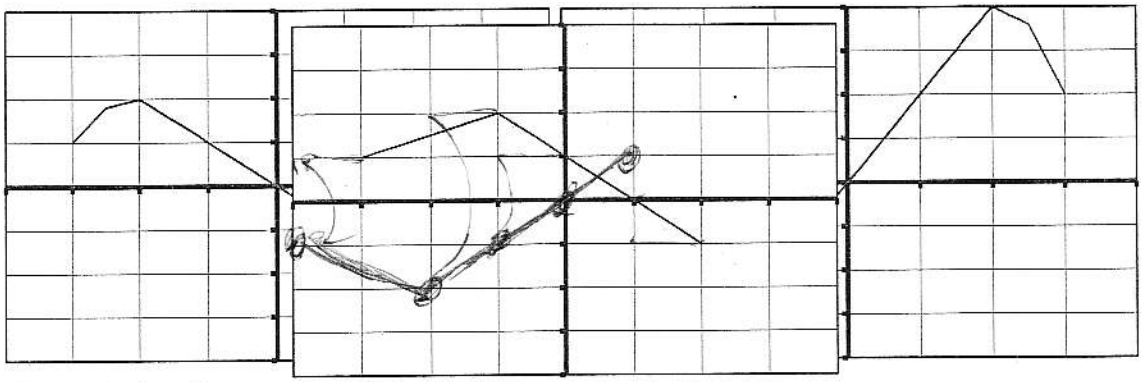
slope $= \frac{3}{1}$

y-int $= (0, 0)$

(9) ~~T~~ F

10) Describe in words the following transformation: $-3f(x - 2) + 1$

11) Graphed below is the function $g(x)$ and a transformation of $g(x)$. Write an equation for the transformation.



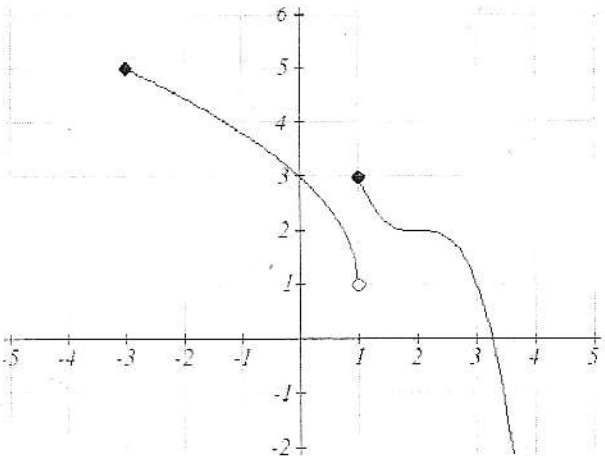
12) Shown below is a graph of $f(x)$. Sketch a graph of $-f(x + 1)$

Left 1
reflected around x-axis

13) Suppose the function $f(a)$ gives the amount of tax owed by a person with an income of a. Write in function notation:

a) I paid \$100 less in taxes than I owed
b) Because of a deduction, I had to pay taxes on \$100 less than my income.

14) Write an equation for the piecewise function graphed below. Hint: it is a comprised of two transformed toolkits.



$2\sqrt{x-1} + 1$ on $[-3, 1)$

$(x-2)^3 + 2$ on $[1, \infty)$

(10) Shifted Right 2
Stretched vertically by a Factor 3
Reflected around the x-axis
Shifted up 1

(11) All messed up

(12) Flat middle graph
See paper

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(13) (a) $f(x) - 100$ — Tax Credit.

(b) $f(x - 100)$ — Tax deduction

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(14) on Paper