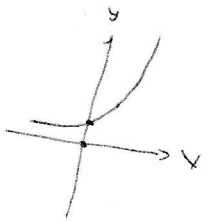
Ch 9, 10, 11 Review

1) $f(x) = 2^x$

x	y
0	1
1	2
2	4
-1	$\frac{1}{2}$
-2	$\frac{1}{4}$



2) 10.56

b) 9.97

c) 6

d) 9

3 a) $(g \circ f)(x)$ $f(x) = 7x+1$ $g(x) = x^2 - 9$

$g(f(x))$

$g(7x+1)$

$g(7x+1) = (7x+1)^2 - 9$

$= 49x^2 + 14x + 1 - 9$

$= 49x^2 + 14x - 8$

$(g \circ f)(x) = 49x^2 + 14x - 8$

b) $(f \circ g)(2)$

$f(g(2))$ $\quad g(2) = 2^2 - 9$

$= 4 - 9$

$f(-5)$ $\quad g(2) = -5$

$f(-5) = 7(-5) + 1$

$= -35 + 1$

$= -34$

$(f \circ g)(2) = -34$

4) $f(x) = 7x - 5$

$y = 7x - 5$

$x = 7y - 5$

$7y = x + 5$

$y = \frac{x+5}{7}$

$f^{-1}(x) = \frac{x+5}{7}$

5) Determines if a function has an inverse

6 a) $5^2 = x$

b) $\log_b 8 = 3$

7 a) $\log_4 16$

$\log_4 4^2$

2

b) $\sqrt{x}$

c) $5^x = 134$

$\log 5^x = \log 134$

$x \log 5 = \log 134$

$x = \frac{\log 134}{\log 5}$

$= \frac{2.127}{0.6989}$

$x = 3.04$

d) $\log_4 (x+3) = 2$

$4^2 = x + 3$

$16 = x + 3$

$x = 13$

8) $\log_c \left(\frac{\sqrt[3]{x}}{36y^4} \right)$

$\log_c \sqrt[3]{x} - \log_c 36y^4$

$\frac{1}{3} \log_c x - \log_c \frac{36}{3} + 4 \log_6 y$

$\frac{1}{3} \log_c x - 2 + 4 \log_c y$

9) $4 \log_b x - 2 \log_b 6 - \frac{1}{2} \log_b y$

$\log_b x^2 - \log_b 6^2 - \log_b y^{\frac{1}{2}}$

$\log_b \frac{x^2}{36} - \log_b y^{\frac{1}{2}}$

$\log_b \frac{x^2}{36\sqrt{y}}$

10) $\log_5 140$

$\frac{\log 140}{\log 5}$

$\frac{2.1461}{0.6989}$

3.07

11) 8 grams

12) $x^2+y^2+8x+4y+16=0$

$x^2+8x+y^2+4y=-16$

$x^2+8x+16+y^2+4y+4=-16+16+4$

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

center $(-4,-2)$

radius $=2$

13) $(-1,4)\ (3,-2)$

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

$=\sqrt{(3+1)^2+(-2-4)^2}$

$=\sqrt{4^2+(-6)^2}$

$=\sqrt{16+36}$

$=\sqrt{52}$

$=\sqrt{4\cdot13}$

$=2\sqrt{13}$ units

distance

midpoint

$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

$\left(\frac{-1+3}{2}, \frac{4-2}{2}\right)$

$\left(\frac{2}{2}, \frac{2}{2}\right)$

$(1,1)$

midpoint

14) center

$(-3,1)$

radius 3

14) $(x-3)^2+(y+2)^2=25$

15) $\sum_{k=1}^{5} 5k$

$5+10+15+20+25$

65

16) $\sum_{i=1}^{9} i$