Question 1
A. r^2=9, r=3
B. (|15(5)-(7)-7|)/sqrt(225+1)=(61sqrt(226))/226
C. (8-5)^2+(y-7)^2=9
=(y-7)^2=0, y=7
(a,b)=(8,7)
a+b=15
D. Distance from center to line=(61sqrt(226))/226
D-radius= (61sqrt(226)-678)/226

Question 2
A. 1/magnitude = 1/5
B. magnitude = rt34, rt34-(3-5i)=rt34-3+5i
C. 9i+16-25i-36=34i-20
D. (i+1)^2=2i, (i-1)^2=-2i, conjugates, sum =0

Question 3.

A. Log_4 (x^2-9)=2 → x^2-9=8 → x=1,-1 both are extraneous, NO SOLS
B. 2x+7=x^2+4x+4 → x^2+2x-3=0 → (x+3)(x-1)=0 → x=-3,1 → -3 is extraneous, 1
C. numerator = ln12/2=ln6, denom = ln36, division results in log_36 6 = ½
D. log *3 3 = 1, x=log*5 25 = 2

Question 4.

A. (x-3)^2=0, x=3
B. (x+1)(x-1)(7x-5)=0 → 1-1=0
C. –b/a=-(-5)=5
D. bring the 1 over, (c/a_n) =8/1=8

Question 5.

A. write x(log(1000))=1000 → 3x=1000→ x=1000/3
B. x+1=5, x=4 → x+1=-5, x=-6
C. 2x-3=x^2 → x^2-2x+3=0→ x=3,-1 → extraneous, x=3
D. log3+log3=log9=logx→ x=9

Question 6
A. 50/5+50/25=10+2=12.
B. binomial theorem, (8choose2)*(2x)^6(3)^2= 28*64*9x^6=16128x^6
C. (512/27)^(2/3)=(8/3)^2=64/9
D. x-9=4x+3→ 3x=-12 →x=-4 (extraneous). x-9=-4x-3→ 5x=6 → x=6/5. Sum of roots = 6/5

Question 7.

A. G(8)=10/5=2.
B. x+3=4, f^-1(4) =1, x+2/5=4 -> g^-1(4) = 18, 3x+1=4→h^-1(4)=1. Product =18.
C. remainder theorem → d(-3) =109
D. 4

Question 8.

A. –b/2a=-3. F(3) = -9+18+16=25.
B. minimum of absolute value is 0, 2.
C. solving results in -4,3
D. determinant of inverse is 1/determinant, determinant=6, 1/6.

Question 9.

A. 5 vowels, so 5*26*26=3380.
B. arithmetic sequence, d=4. 1+4n=2009 → x=504. 505 terms.
C. let sqrt = (a+brt2), square and equate like terms results in 3-2rt2.
D. (a+b)(a^2-ab+b^2)=(5)(19-3)=80.

Question 10.

A. zy^2=ksqrtx→ k=zy^2sqrt(x)/x
B. 4*2+4+4/2=8. 4^2+2^2+4+7/2 = 31/2. 31/2 * 8= 124.
C. 147= 7^2 * 3 = 2p+q
D. log_2 x= k, k^2+2k-3=0. (k+3)(k-1)=0. Log_2 x=-3, x=1/8. Log_2=1 x=2. EITHER 4^2=16. Or 4^(1/8).

Question 11.

A. 0.
B. c/a = rt24/7 = 2rt6/7
C. x^2 +3y^2=9. X^2/9 + y^2/3 = 1. A=3, b=rt3. Area = abpi= 3rt3pi
D. 2b^2/ a = 2*7/rt13 = 14rt13/13

Question 12.

A. f(-1) = -(-1)+3=4.
B. f(2) = 101.
C. f(3)=f(1)+f(2)=51+101=152.
D. f(6)=f(4)+f(5)=f(3)+f(2)+f(4)+f(3)=152*2+101+f(3)+f(2)= 304+101+152+101=658.