Complex Numbers Exam Practice

1. Verify that i is a solution of .

Hence find all the solutions. (5)

1. Identify the locus in the complex plane given by = 2.
2. Given that , show that (1)

Use de Moivre’s theorem to prove , where k is a

Natural number. (3)

Expand by the binomial theorem and hence show that

. (5)

1. Given the equation , express *z* in the form *a + ib*. (4)
2. Let .
3. Use the binomial expansion to express in the form , where *u* and *v*

Are expressions involving *sin* and *cos.* (3)

1. Use de Moivre’s theorem to write down an expression for . (1)
2. Using the results of (a) and (b), show that

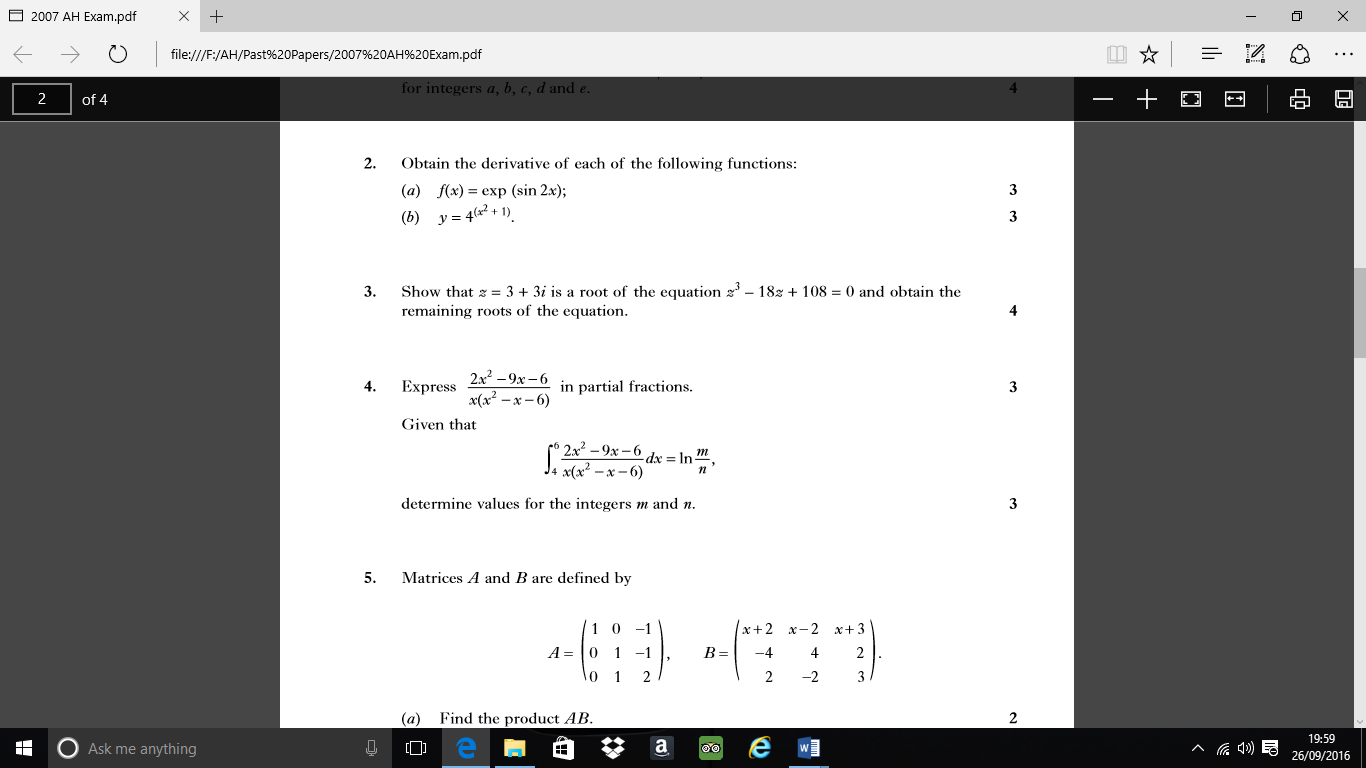
, where ,

Stating the values of p, q and r. (6)

1. Express the complex number , in the form , stating

the values of x and y. (3)

Find the modulus and argument of z and plot z and z on an Argand diagram (4)



7.

8. Given that where , show that for suitable

values of a, b and c. (3)

Indicate on an Argand diagram the locus of complex numbers z which satisfy .

( 1)