



Imaginary Numbers

NAME:

CLASS:

DATE:



Basic

1) Calculate:

a) 6^2

b) 4^4

c) 10^6

d) 7^3

2) Find the value of:

a) $3^2 + 4^2$

b) $6^3 - 5^3$

c) $21^2 - 20^2$

d) $3^7 - 7^3$

3) Find the square root of:

a) 100

b) 169

c) 625

d) 4225

4) Find the value of each expression when $a = 3$, $b = 2$ and $c = 4$.

a) $a^2 + b^2$

b) $(a + b)^2$

c) $c^3 - b^3$

d) $5(ab)^2$

5) Solve each equation for x .

a) $2^x = 512$

b) $3^x = 2187$

c) $10^x = 100$ million



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Core

1) Calculate:

a) 2^8

b) 4^5

c) 7^4

d) 9^2

2) Write down the value of:

a) $\sqrt{9}$

b) $\sqrt{64}$

c) $\sqrt{225}$

d) $\sqrt{121}$

3) Find the value of each expression when $a = 3$, $b = 4$ and $c = 6$.

a) $4b^5 - b^4$

b) $(c^2 - b^2)^2$

c) $(2c - 3a)^5$

4) Simplify:

a) $(4 + i5) + (3 - i2)$

b) $(6 - i3) - (2 - i6) + (3 - i4)$

c) $(6 + i5) - (4 - i3) + (2 - i7)$

d) $(3 + i5) - (5 - i4) - (-2 - i3)$

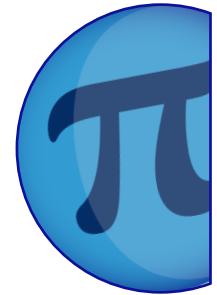


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Advanced

1) Solve this quadratic equation: $2x^2 + 9x + 7 = 0$

2) Simplify:

a) $(3 + i7) + (4 + i3)$

b) $(6 + i2) - (4 + i8)$

c) $(6 - i3)(2 + j5)(6 - i2)$

d) $(4 - i3)^2$

e) $(5 - i4)(5 + i4)$

f) $(6 - i2)(6 + i2)$

3) Multiply the following by an appropriate factor to give a product that is entirely real.

a) $(4 - i3)$

b) $(5 - i2)$

c) $(6 - i3)$

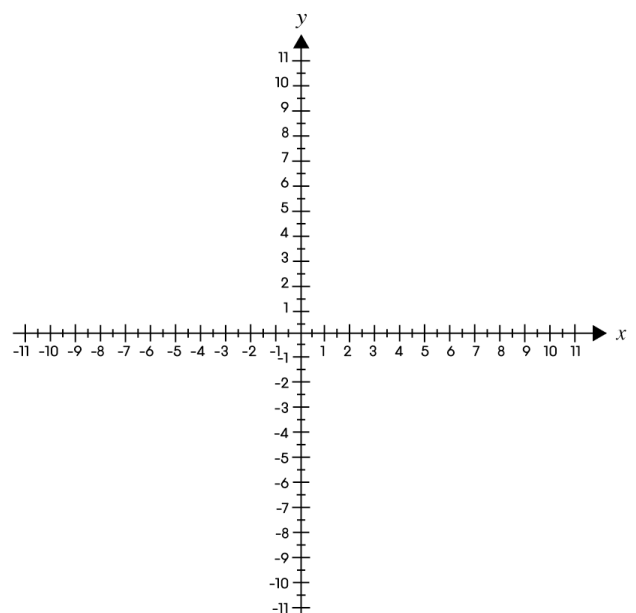
d) $(8 - i2)$

4) If $(a + b) + i(a - b) = 7 + i2$, find the values of a and b.

5) Draw an Argand diagram to represent:

a) $z_1 = 2 + i3$

b) $z_2 = -3 + i2$





Imaginary Numbers

ANSWERS

Basic

- | | | | |
|---------------|------------|--------------|---------|
| 1) a) 36 | b) 256 | c) 1,000,000 | d) 343 |
| 2) a) 25 | b) 91 | c) 41 | d) 1844 |
| 3) a) 10 | b) 13 | c) 25 | d) 65 |
| 4) a) 13 | b) 25 | c) 56 | d) 180 |
| 5) a) $x = 9$ | b) $x = 7$ | c) $x = 8$ | |

Core

- | | | | |
|----------------|------------|------------|----------|
| 1) a) 256 | b) 1024 | c) 2401 | d) 81 |
| 2) a) 3 | b) 8 | c) 15 | d) 11 |
| 3) a) 3840 | b) 400 | c) 243 | |
| 4) a) $7 + i3$ | b) $7 - i$ | c) $4 + i$ | d) $i12$ |

Advanced

1) $x = -1$ or $x = \frac{-7}{2}$

2) a) $7 + i10$
e) 41

b) $2 - i6$
f) 40

c) $210 + i90$

d) $7 - i24$

3) a) 25

b) 29

c) 45

d) 68

4) $a = 4.5$; $b = 2.5$

5)

