

Name: \_\_\_\_\_  
Student ID: \_\_\_\_\_

## Test 1

This test is graded out of 50 marks. No books, notes, graphing calculators or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

**Question 1.** (2 marks) 45 is 20% of what number?

**Question 2.** (1 mark each) Simplify and write all answer without using exponents and decimals:

a.

$$-(-2)^5$$

b.

$$\left(\frac{-2}{5}\right)^{-2}$$

c.

$$\left(\frac{3}{-5}\right)^3$$

d.

$$-(256z)^0$$

**Question 3.** (2 marks each) Simplify and write all answers so that only positive exponents remain:

a.

$$\left(\frac{b^{-2}}{b}\right)^{-2}$$

b.

$$-\left(\frac{-x}{3}\right)^4$$

**Question 4.** (5 marks) Simplify and write the solution so that only positive exponents remain:

$$\left( \frac{x^{-2}y^3z^1}{-x^3y^{-2}z^0} \right)^{-2}$$

**Question 5.** (3 marks) Simplify:

$$-[8 - 4(x + 5) + x] - (x - 1)$$

**Question 6.** (2 marks) Expand and simplify:

$$3x^2(x + 1)(x - 2)$$

**Question 7.** (4 marks) Expand and simplify:

$$(x+2)(x-3) - (x+3)^2 - 13$$

**Question 8.** (4 marks) Divide using long division:

$$(x^3 + 2x^2 - 2) \div (x + 1)$$

**Question 9.** (2 marks) Factor completely:

$$12x^2 + 11x + 2$$

**Question 10.** (4 marks) Simplify completely:

$$\frac{x^2 - 11}{x^2 + 7x + 6} - \frac{x}{x + 6} + \frac{2}{x + 1}$$

**Question 11.** (6 marks) Simplify completely:

$$\frac{x^2 + 5x}{x^2 - 25} \times \frac{x^2 - x - 20}{3x + 12} \div \frac{x^2 + 3x}{3x^2 - 27}$$

**Question 12.** (2 marks) Solve for  $x$ :

$$5(x - 6) = -2(15 - 2x)$$

**Question 13.** (3 marks) Solve for  $x$ :

$$\frac{4x + 1}{2} - \frac{2x + 3}{3} = \frac{5x - 1}{4}$$

**Question 14.** (5 marks) Solve for  $x$ :

$$\frac{7}{x^2 - x - 6} - \frac{2}{x - 3} = \frac{1}{x + 2}$$