ALGEBRA exam practice questions:

1. Find the value of the following:
   1.1 $3x$ if $x = 9$
   1.2 $4(3y)$ if $y = 2$
   1.3 $\frac{a+b}{a}$ if $a = 6$ and $b = 2$

2. Consider the following expression:
$$5x^4 - 3x^6 + 2x^2 - x + 7x^5 + 5$$
   2.1 Rewrite the expression in order of descending power of x.
   2.2 How many terms are there in the above expression?
   2.3 What is the coefficient of the x term?
   2.4 What is the degree of the polynomial?
   2.5 What is the difference between the constant term and 2?

3. Consider the following expression:
$$3a + a^3 - 3(a^2 + 2)$$
   3.1 Simplify the expression and arrange it in descending powers of a
   3.2 How many terms are there in the simplified expression?
   3.3 What is the degree of the simplified expression?
   3.4 What is the coefficient of the a^3 term in the simplified expression?
   3.5 What is the constant in the simplified expression?
   3.6 If $a = \frac{1}{2}$, then what is the value of the expression?

4. Simplify the following expressions:
   4.1 $10x^2 + 2x^2 - 5xy$
   4.2 $16x - 4y + 4x + 12y$
   4.3 $4a \times 2a$
   4.4 $5a^2 \times 2ab^5$
   4.5 $3a + a(a - 5)$
   4.6 $\sqrt{16x^{16}}$
   4.7 $\sqrt[3]{m^6}$
   4.8 $\sqrt[3]{-27x^{12}}$

5. Simplify the following expression showing all your working:
   5.1 $(2x^3)^2(2xy)^0$
   5.2 $(6p^5)^2 \div 4p^2$
   5.3 $\sqrt{100x^4 - 64x^4}$
   5.4 $3t \times 5 - 2 \times 6t + 6t^2 \div 3t$

6. Solve for x in the following equations
   6.1 $x + 8 = 19$
   6.2 $5x = 15$
   6.3 $3x + 4 = 31$
   6.4 $3b - 36 = 0$
   6.5 $\frac{10x}{3} = 6$
   6.6 $x^2 = 36$
   6.7 $\sqrt[3]{2y + 1} - 5 + 2\sqrt[3]{2y + 1} = -14$