

Name: _____

Student ID: _____

Test 1

This Test is graded out of 60. No books, notes 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.

Question 1. (3 marks) Simplify:

$$\frac{(-3xy^{-3})^{-3}}{(2xy^{-1})^{-1}}$$

Question 2. (3 marks) Expand and then simplify:

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

Question 3. (3 marks) Use long division to find the quotient and remainder:

$$\frac{x^3 + 3x^2 - 2}{x - 2}$$

Question 4. (1 mark) Factor:

$$x^2 - 9$$

Question 5. (2 marks) Factor:

$$9x^2 - 12x + 4$$

Question 6. (1 mark) Factor:

$$x^2 + x - 30$$

Question 7. (1 mark) Factor:

$$x^2 + 11x - 26$$

Question 8. (3 marks) Factor:

$$12x^2 - 23x + 10$$

Question 9. (5 marks) Simplify:

$$\frac{x^2 - 1}{x^2 - x - 2} \times \frac{3x - 6}{2x - 4} \times \frac{x^2 - 4}{x^2 + x - 2}$$

Question 10. (2 mark) Solve for x:

$$4(x - 1) = 20 - (x + 3)$$

Question 11. (2 marks) Rationalize the denominator:

$$\frac{1 - \sqrt{5}}{\sqrt{5}}$$

Question 12. (3 marks) Solve the quadratic equation:

$$2x^2 + x - 15 = 0$$

Question 13. (3 marks) Solve using the quadratic equation:

$$4x^2 - 20x + 25 = 0$$

Question 14. (3 marks) Solve for x:

$$\frac{1}{x+4} - \frac{1}{4} = \frac{x}{x+4}$$

Question 15. (4 marks) Find the distance and midpoint of the line segment between the points $(5, -1)$ and $(-3, -4)$:

Question 16. (3 marks) Write the equation of the circle if the center is $(2, 7)$ and $(5, 3)$ is a point on the circumference:

Question 17. (4 marks) Find the domain and range of:

$$f(x) = \frac{1}{\sqrt{2-x}}$$

Question 18. (3 marks) Use the intercepts to graph the following: $y - 3 = -(x + 4)$

Question 19. (4 marks) Find the equation of the line passing through $(4, -6)$ and $(8, 2)$.

Question 20. (4 marks) Find the equation of the line passing through $(-5, 4)$ and perpendicular to the line $3y = -(x + 2)$.

Bonus. (3 marks)

Solve for x in terms of k : $k^2x^2 - 3kx - 10 = 0$.