

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:

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

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

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

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

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

Question 4. (1 mark) Factor:

$$x^2 - 16$$

Question 5. (2 marks) Factor:

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

Question 6. (1 mark) Factor:

$$x^2 + x - 20$$

Question 7. (1 mark) Factor:

$$x^2 + 5x - 36$$

Question 8. (3 marks) Factor:

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

Question 9. (5 marks) Simplify:

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

Question 10. (2 mark) Solve for x:

$$5(x - 2) = 10 - (x + 2)$$

Question 11. (2 marks) Rationalize the denominator:

$$\frac{1 - \sqrt{3}}{\sqrt{3}}$$

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

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

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

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

Question 14. (3 marks) Solve for x:

$$\frac{1}{x+2} - \frac{1}{2} = \frac{x}{x+2}$$

Question 15. (4 marks) Find the distance and midpoint of the line segment between the points $(4, -1)$ and $(-2, -4)$:

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

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

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

Question 18. (3 marks) Use the intercepts to graph the following: $y - 1 = -(x + 1)$

Question 19. (4 marks) Find the equation of the line passing through $(4, -5)$ and $(8, 1)$.

Question 20. (4 marks) Find the equation of the line passing through $(4, -5)$ and perpendicular to the line $2y = -(x + 1)$.

Bonus. (3 marks)

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