Here's why the answers above are correct:

- 1. c) $x \neq 3$ as the function is not defined for x = 3.
- 2. a) e^x is the derivative of e^x, this can be derived using the limit definition of derivative and the properties of exponential functions.
- d) two solutions the equation x² + 4x + 4 = 0 is a quadratic equation in standard form, (ax² + bx + c = 0) and since b² 4ac > 0, the solutions are given by (-b ± √(b² 4ac))/ 2a.
- 4. a) x = 5, 2^5 = 32
- 5. a) 0, The definite integral of x^3 from -1 to 1 is equal to the definite integral of x^3 from 1 to -1 since it's an odd function and the definite integral of an odd function from a to -a is always 0.
- 6. b) $x^2 7x + 12$, This is a standard factorization of the equation U^{K}
- 7. c) $3x^2$, The second derivative of a function $5x^2$ (n is a constant) is given by $n(n-1)x^2(n-2)$
- 8. a) y = -2x + 7. The line is parallel to y = -2x 5, thus, it has the same slope, and the point (2,3) is a non-2 Upar line so the equation is y = -2x + b, b is equal to y-interception =8- 2*2 =7
- 9. c) x = 2, it can be derived by multiplying both sides by x, and simplifying the equation.
- 10. c) 27π , The volume of a sphere is given by V = $(4/3)\pi r^3$, with r = 3, the volume is 27π .

Questions:

What is the sum of the first 100 positive integers?
a) 5050
b) 100
c) 4950
d) 5000
Answer: a) 5050