Follow all directions. This assignment is to be completed in pencil and with all work shown in the space provided. Unless otherwise specified, give exact answers. Box your final answer. Work that is unreadable will be counted as incorrect.

1. **Volume of a Cube**
   The formula for the volume of a cube is $V = S^3$, where S is the length of one edge. If the length of each edge is $3x^2$:
   (a) Find a formula for volume in terms of x.

   (b) Find the volume of the cube if $x = 2$.

2. **Area of a Circle**
   The formula for the area of a circle is $A = \pi r^2$, where r is the length of the radius. If the radius is given as $5x^3$:
   (a) Find a formula for area in terms of the variable x.

   (b) Find the area of the circle if $x = 2$.

3. Simplify each expression. Write answers using positive exponents only.
   (a) $\dfrac{-12a^3b^5}{4a^2b^4}$

   (b) $\left(\dfrac{-1}{2}\right)^{-3}$

4. Find the difference. $(q^6 + 2q^5 + q^4 + 2q^3) - (q^5 + 2q^4 + q^2 + 2q)$

5. Compute each product.
   (a) $-2v^2(v^2 + 2v - 15)$

   (b) $(3r - 5)(r - 2)$

   (c) $(b^2 - 3b - 28)(b + 2)$

   (d) $(5x + 3y)(2x - 3y)$