Find the area between the curves on the given interval.

1. \( y = x^3, \ y = x^2 - 1, \ 1 \leq x \leq 3 \)

2. \( y = e^x, \ y = x - 1, \ -2 \leq x \leq 0 \)

Find the area of the region determined by the intersection of the curves. Choose the variable of integration so that the area is written as a single variable.

3. \( y = x^2 - 1, \ y = 7 - x^2 \)

4. \( y = x, \ y = 2 - x, \ y = 0 \)

5. \( x = 3y, \ x = 2 + y^2 \)

Answers

1) \( \frac{40}{3} \)

2) \( 5 - e^{-2} \)

3) \( \frac{64}{3} \)

4) \( \int_0^1 (2 - 2y) \, dy = 1 \)

5) \( \int_1^2 (3y - 2 - y^2) \, dy = \frac{1}{6} \)