

Topic 21: Area between curves

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