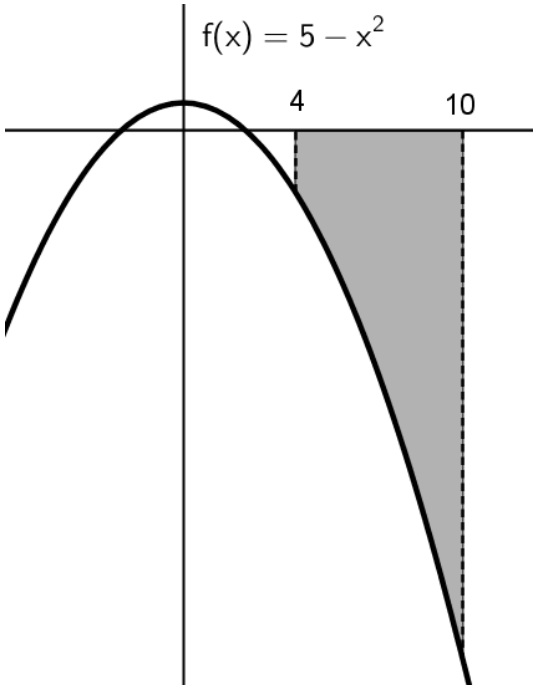
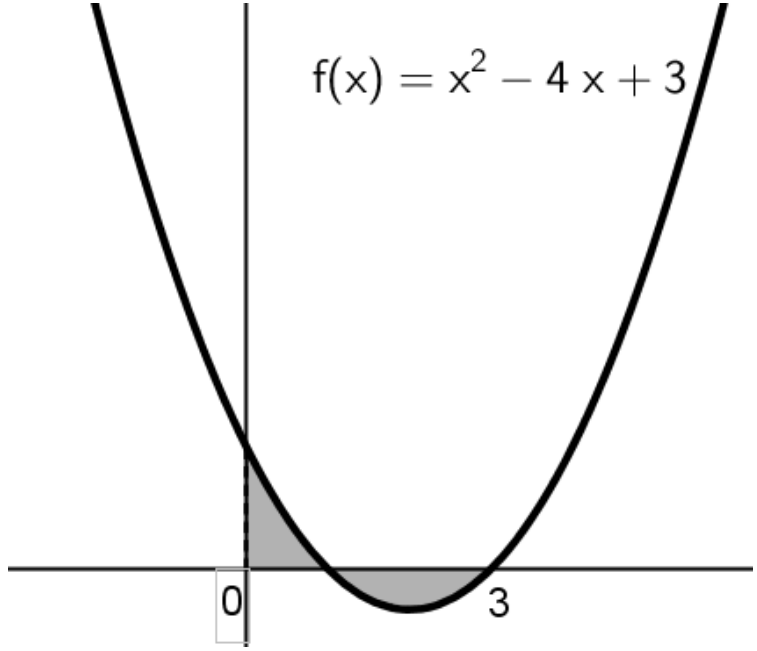
Integrate these…

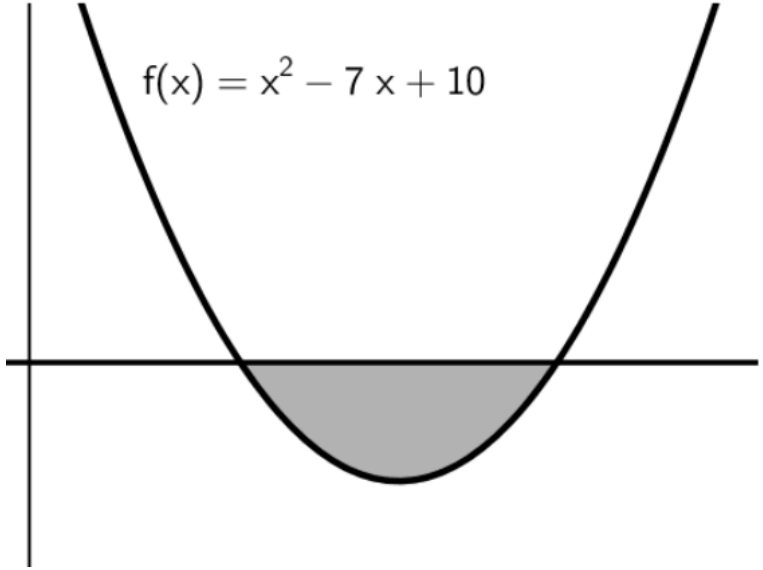
a) $\int 5x^2 + 7x + 4\, dx$

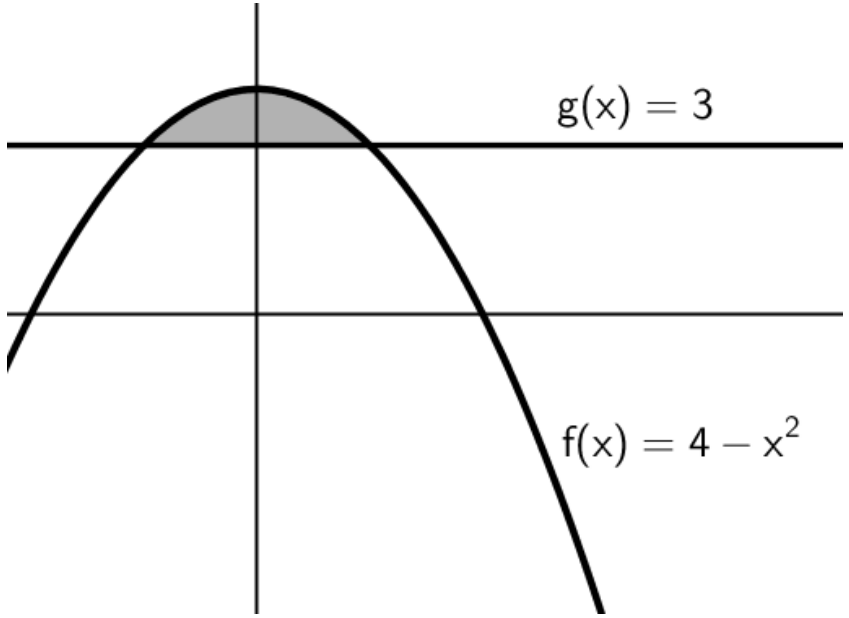
b) $\int_1^8 x^{\frac{2}{3}} + \frac{1}{x^2}\, dx$

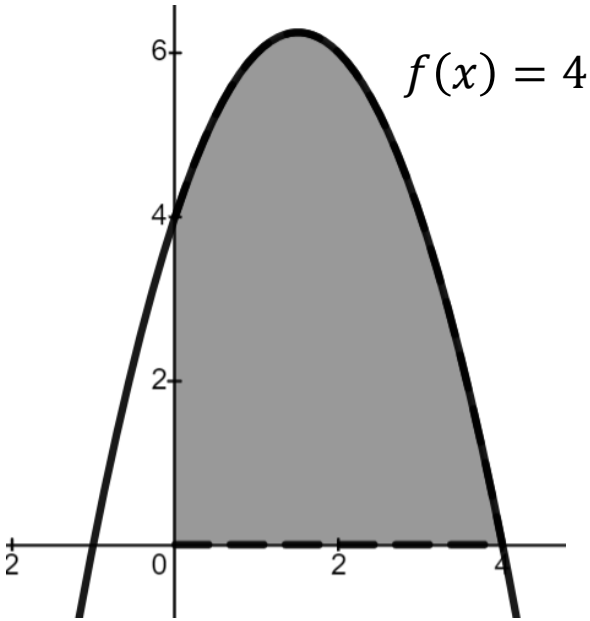
c) $\int \frac{1}{2\sqrt{x}} + \frac{3}{x^{\frac{2}{3}}} + 7\sqrt[3]{x}\, dx$


f(x) = 5 − x²
4
10

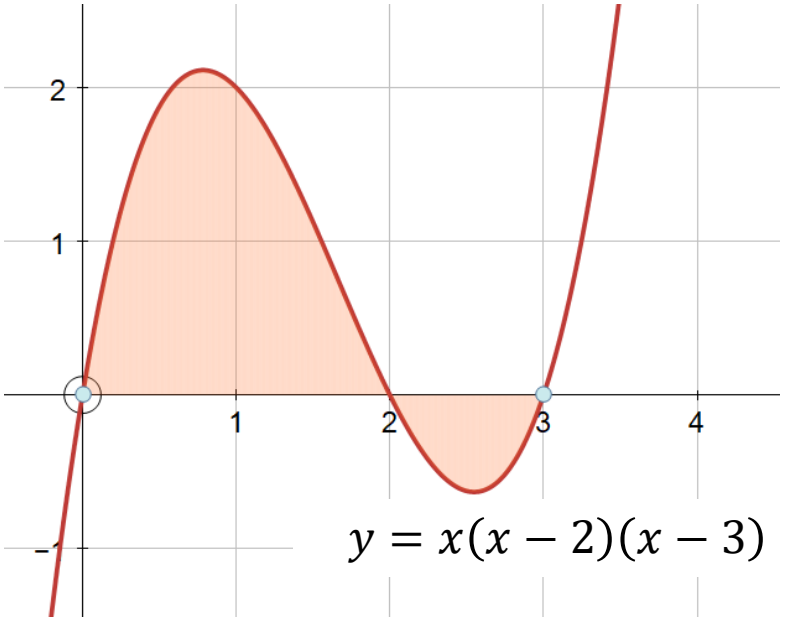

f(x) = x² − 4 x + 3
0
3


f(x) = x² − 7 x + 10

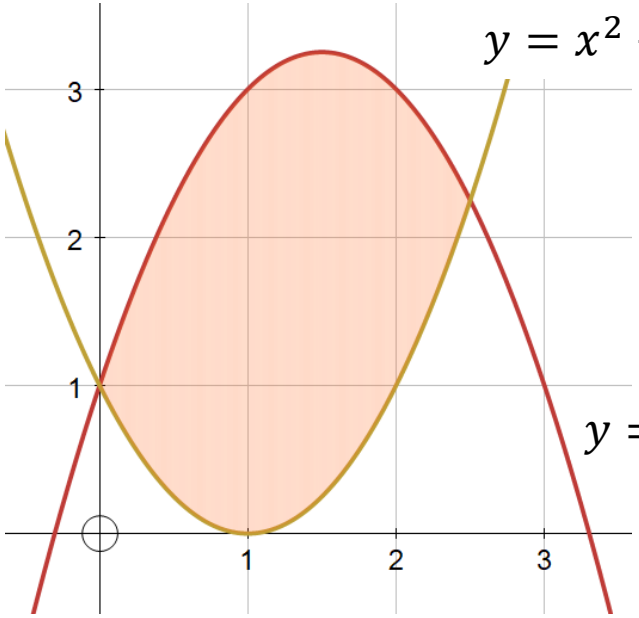

g(x) = 3
f(x) = 4 − x²



$f(x) = 4 + 3x - x^2$

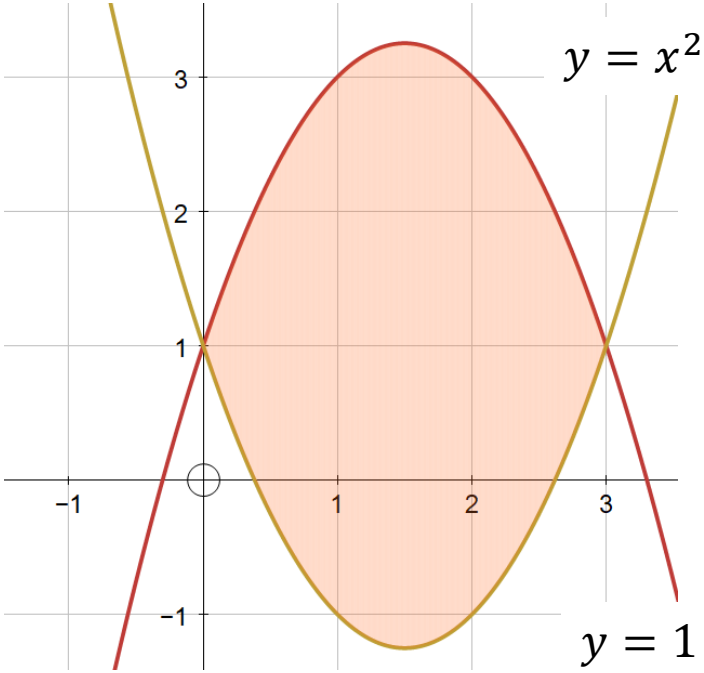


$y = x(x-2)(x-3)$



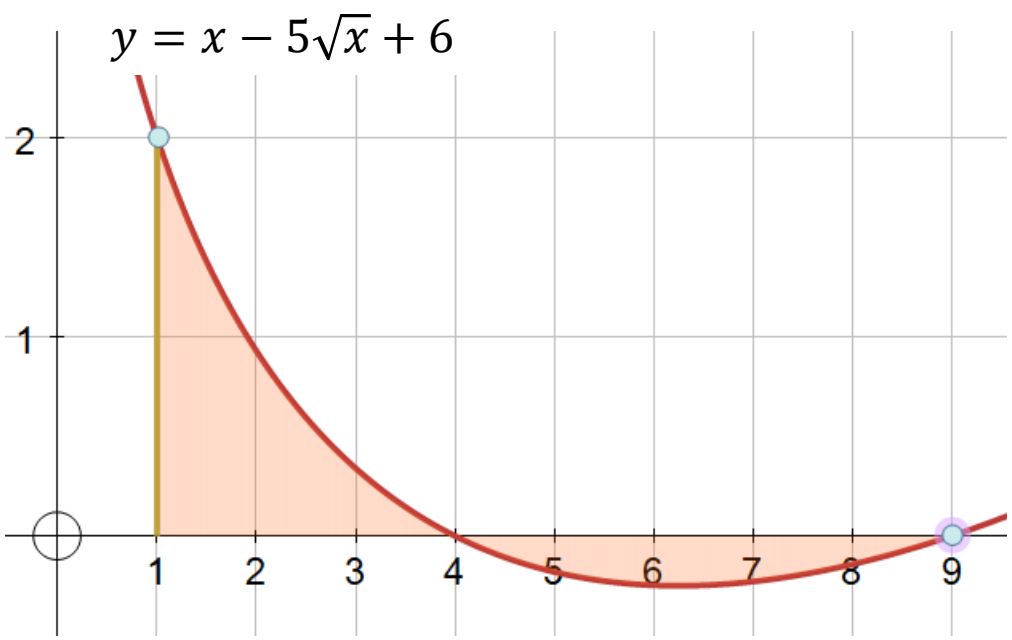
$y = x^2 - 2x + 1$

$y = 1 + 3x - x^2$

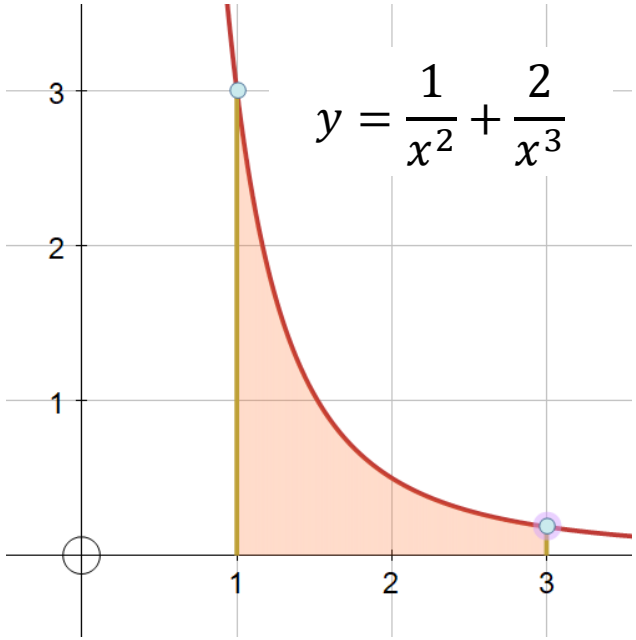


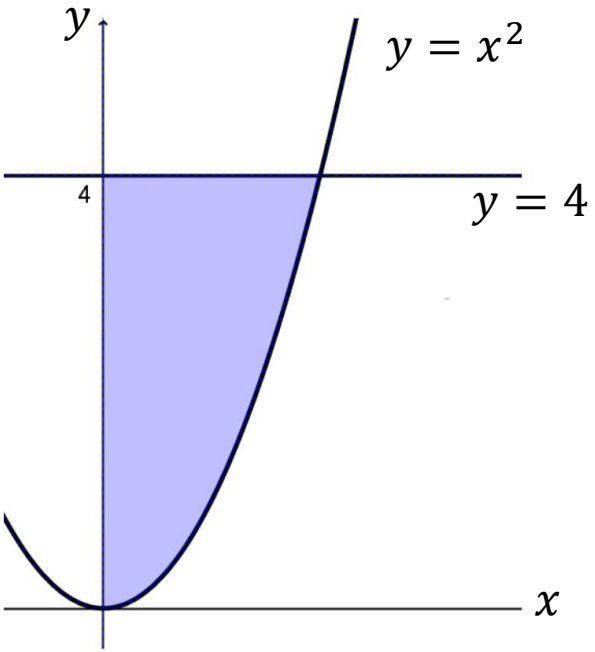
$y = x^2 - 3x + 1$

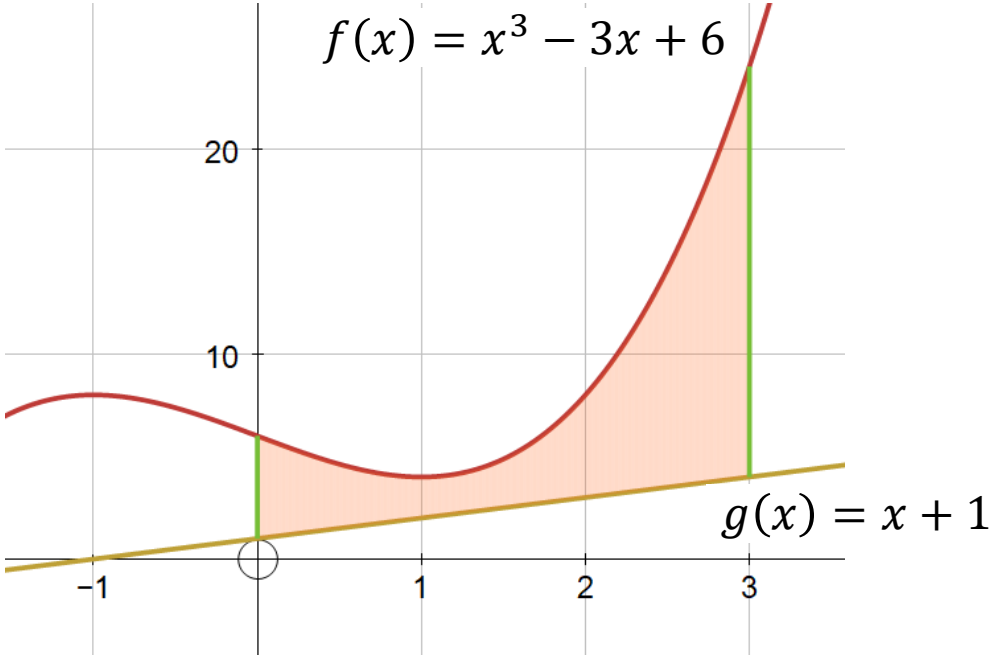
$y = 1 + 3x - x^2$

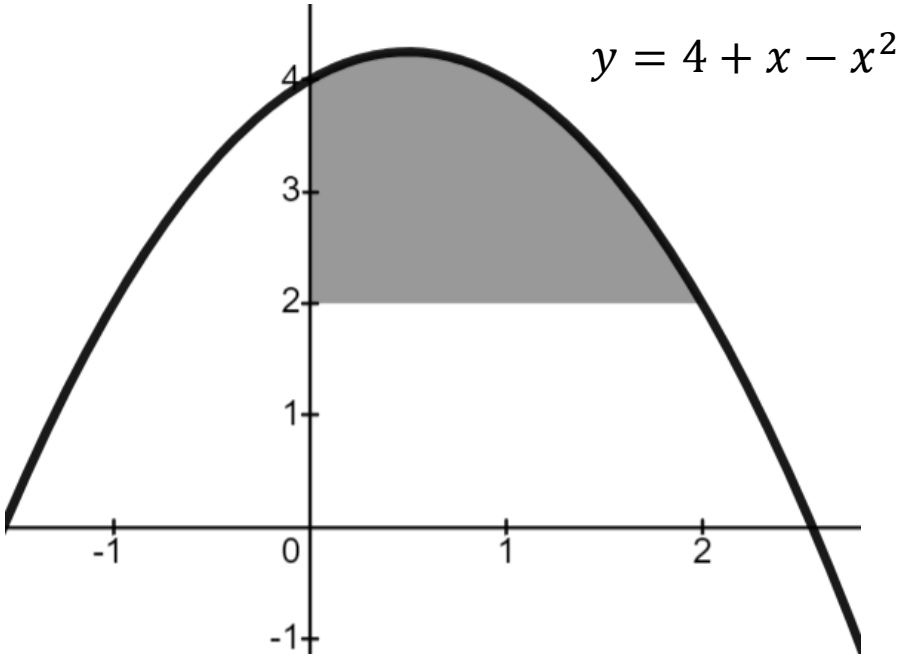


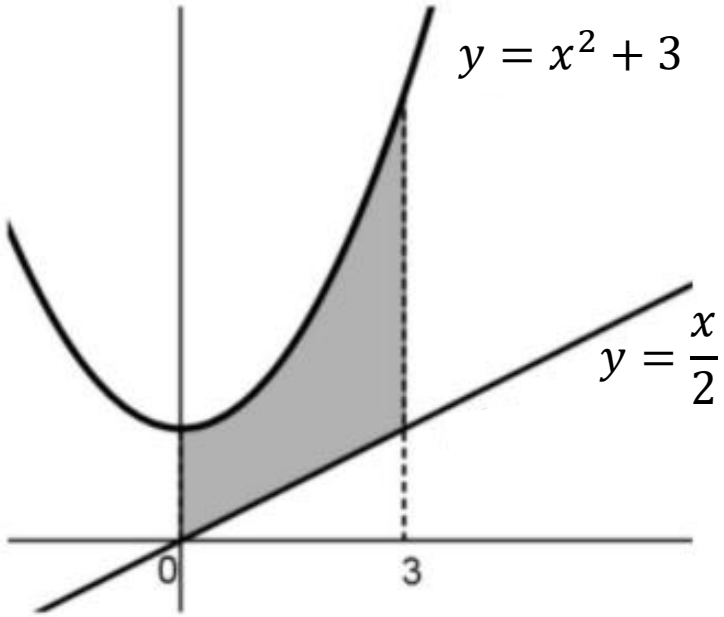
Find the area enclosed between the curve $y = x^3 - x$ and the x axis.



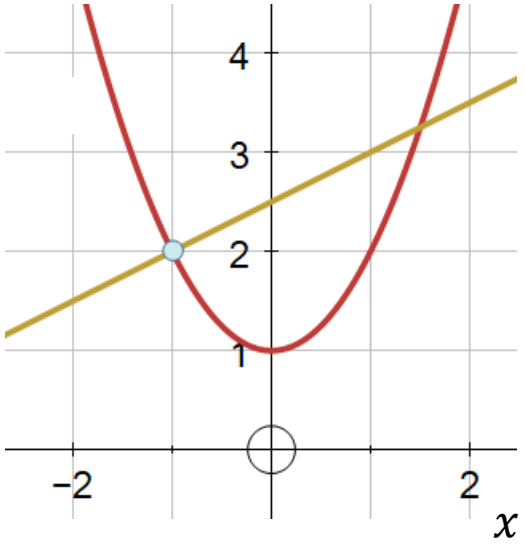




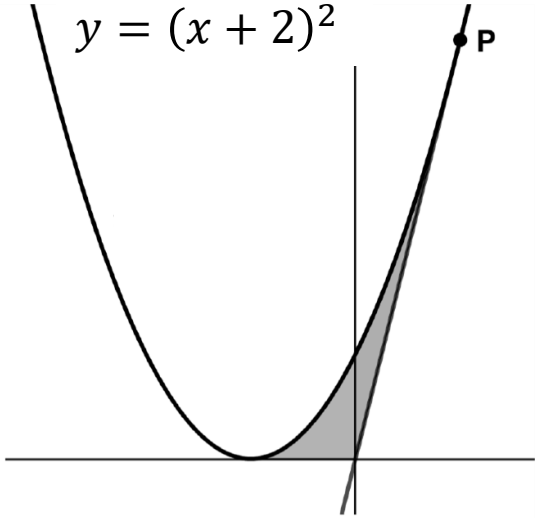




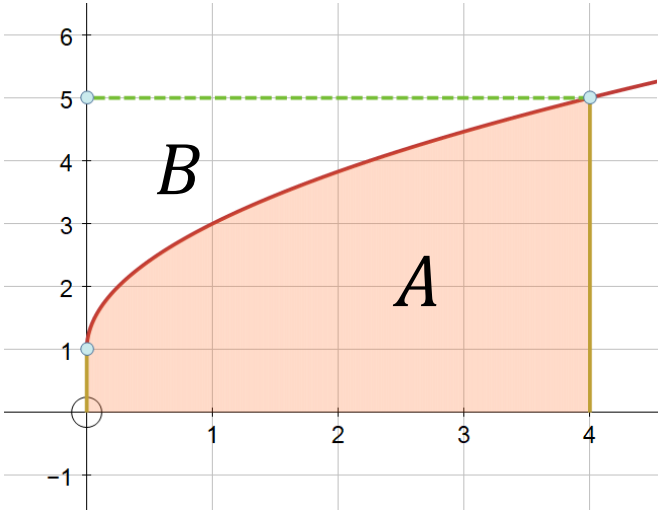
Find the area between the curve $y = x^2 + 1$, and the normal to the curve at the point shown.

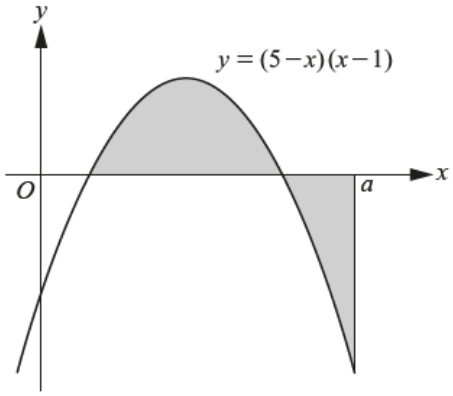


Find the area between the curve and the tangent to the curve as shown below.



Find area B below.
Can you do it without finding area A first?

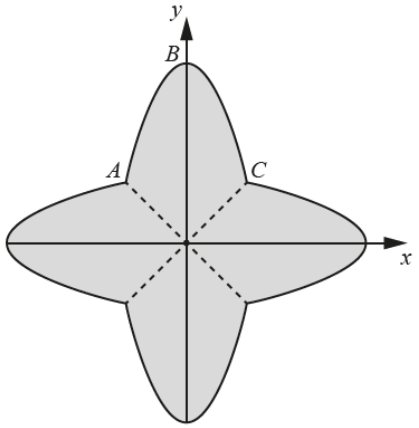




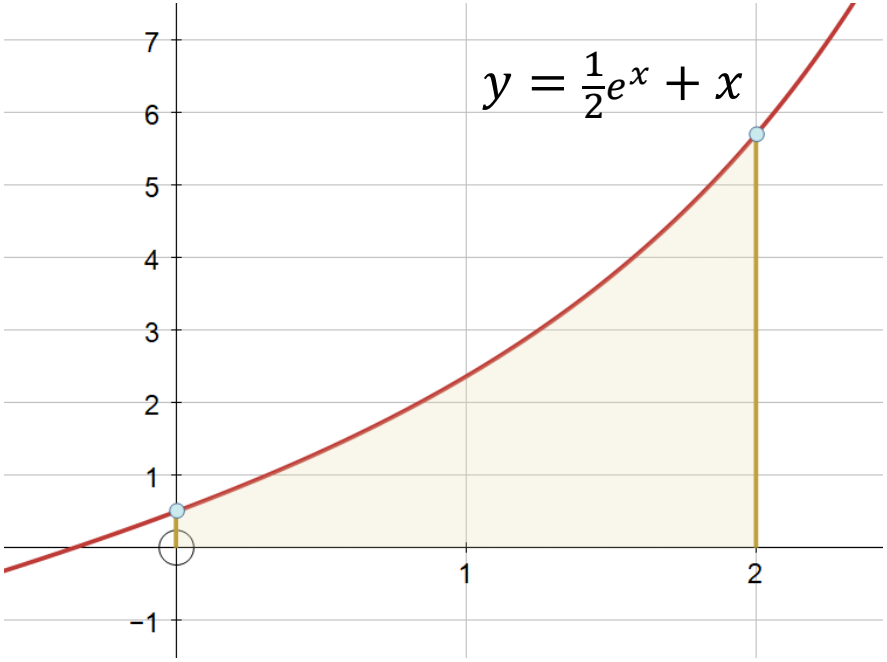
The diagram shows part of the curve $y = (5-x)(x-1)$ and the line $x = a$.

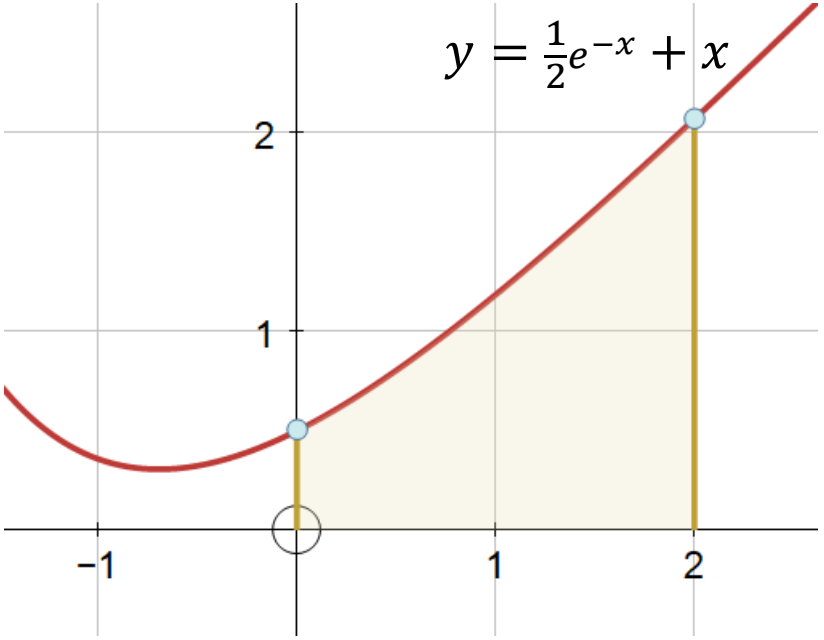
Given that the total area of the regions shaded in the diagram is 19 units^2, determine the exact value of a. **[8]**

The diagram shows a part ABC of the curve $y = 3 - 2x^2$, together with its reflections in the lines $y = x$, $y = -x$ and $y = 0$.



Find the area of the shaded region. **[7]**


$y = \frac{1}{2}e^x + x$
7
6
5
4
3
2
1
−1
1
2


$y = \frac{1}{2}e^{-x} + x$
2
1
−1
1
2

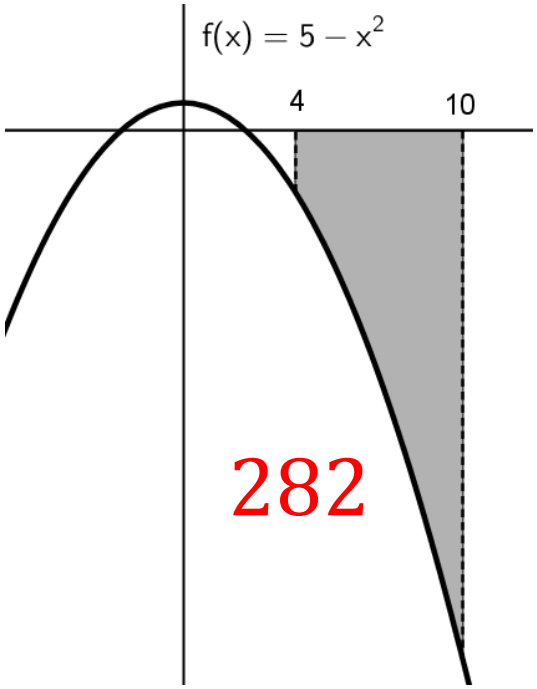
Answers on following slides…

Integrate these…

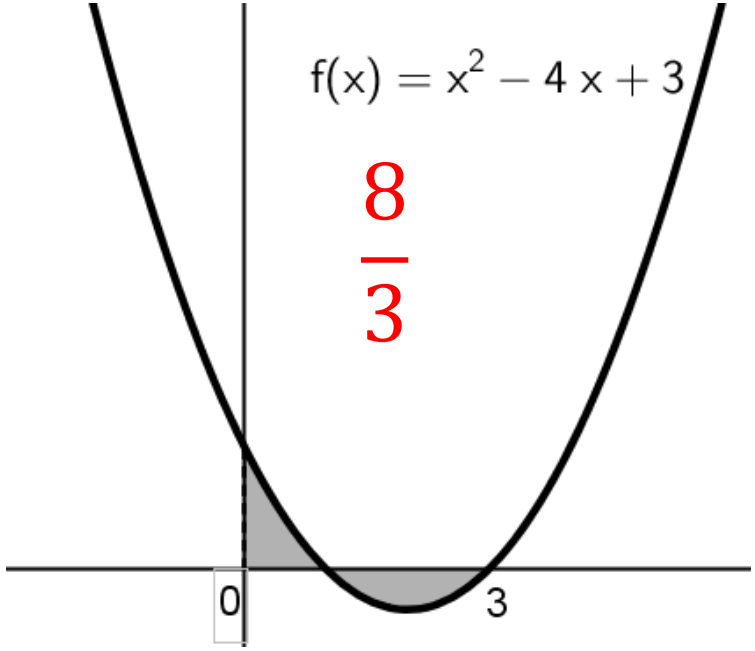
a) $\int 5x^2 + 7x + 4\,dx = \frac{5x^3}{3} + \frac{7x^2}{2} + 4x + c$

b) $\int_1^8 x^{\frac{2}{3}} + \frac{1}{x^2}\,dx = \left[\frac{3x^{\frac{5}{3}}}{5} - \frac{1}{x}\right] = \left[\left(\frac{96}{5} - \frac{1}{8}\right) - \left(-\frac{2}{5}\right)\right] = \frac{779}{40}$

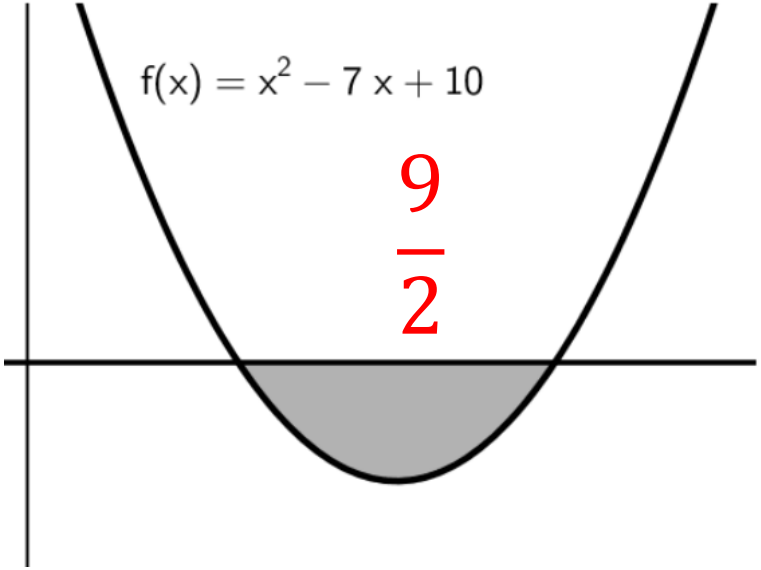
c) $\int \frac{1}{2\sqrt{x}} + \frac{3}{x^{\frac{2}{3}}} + 7\sqrt[3]{x}\,dx = \sqrt{x} + 9\sqrt[3]{x} + \frac{21x^{4/3}}{4} + c$



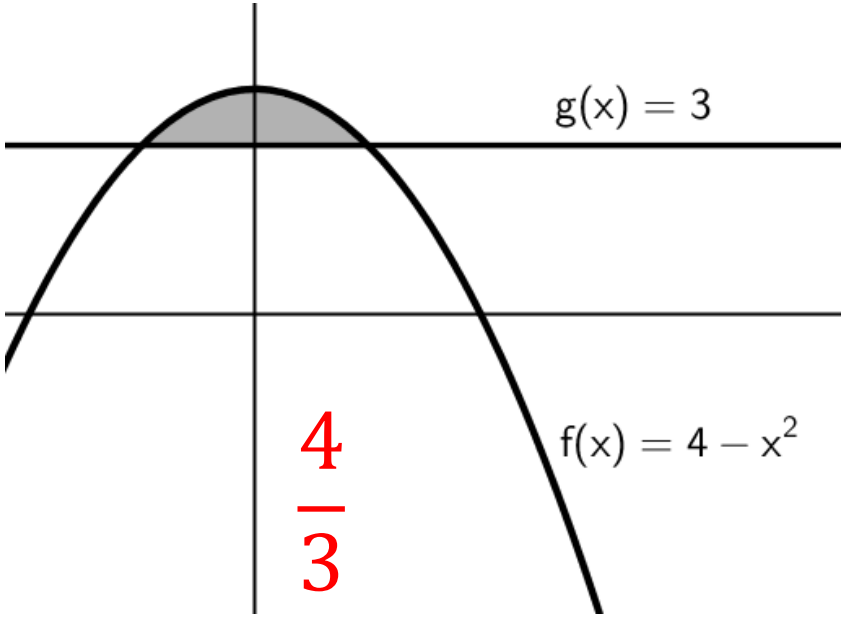
282



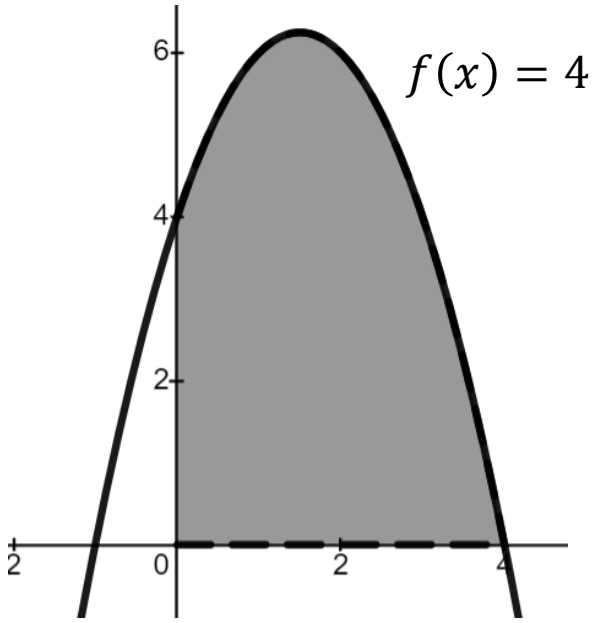
$\frac{8}{3}$



$\frac{9}{2}$

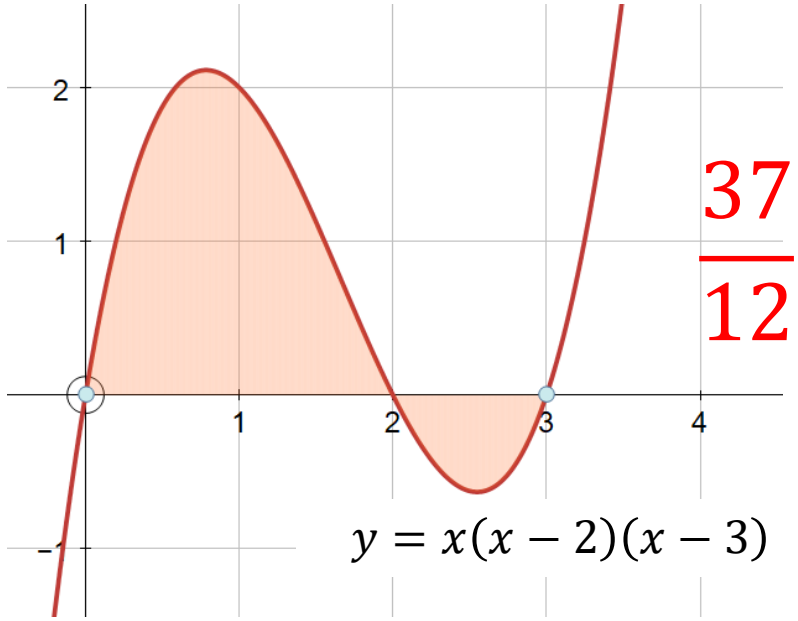


$\frac{4}{3}$



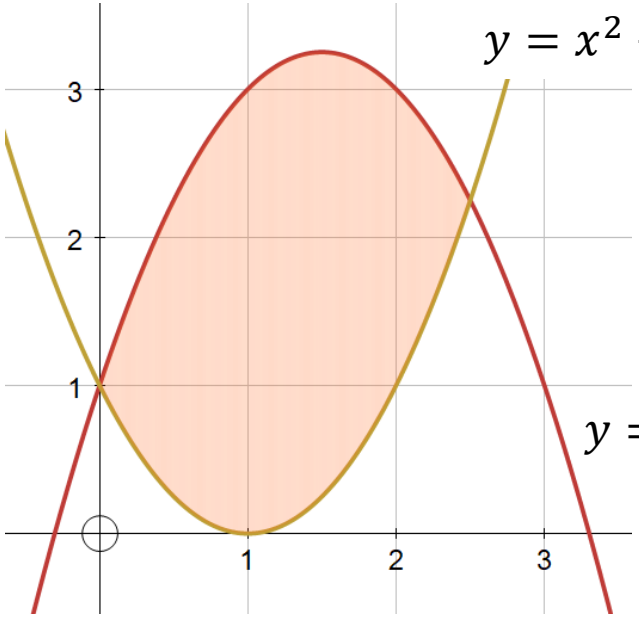
$f(x) = 4 + 3x - x^2$

$$\frac{56}{3}$$



$$\frac{37}{12}$$

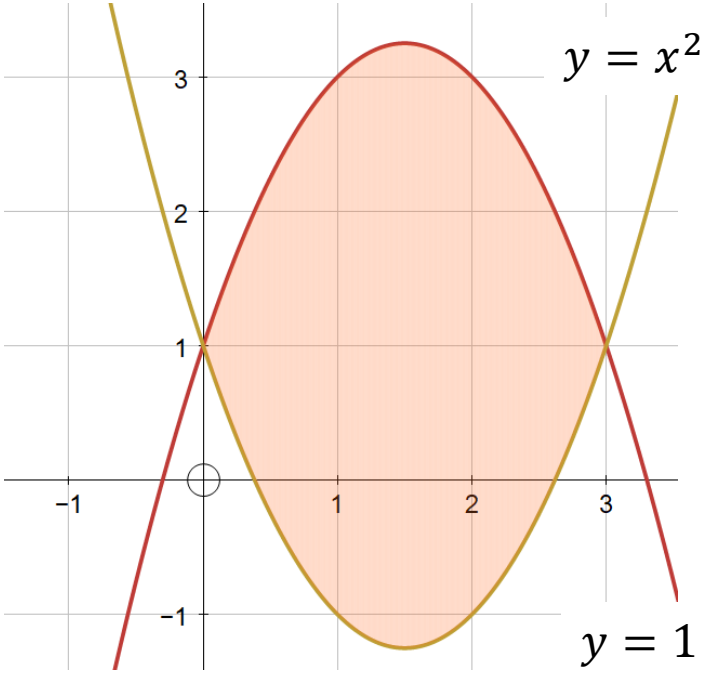
$y = x(x-2)(x-3)$



$y = x^2 - 2x + 1$

$$\frac{125}{24}$$

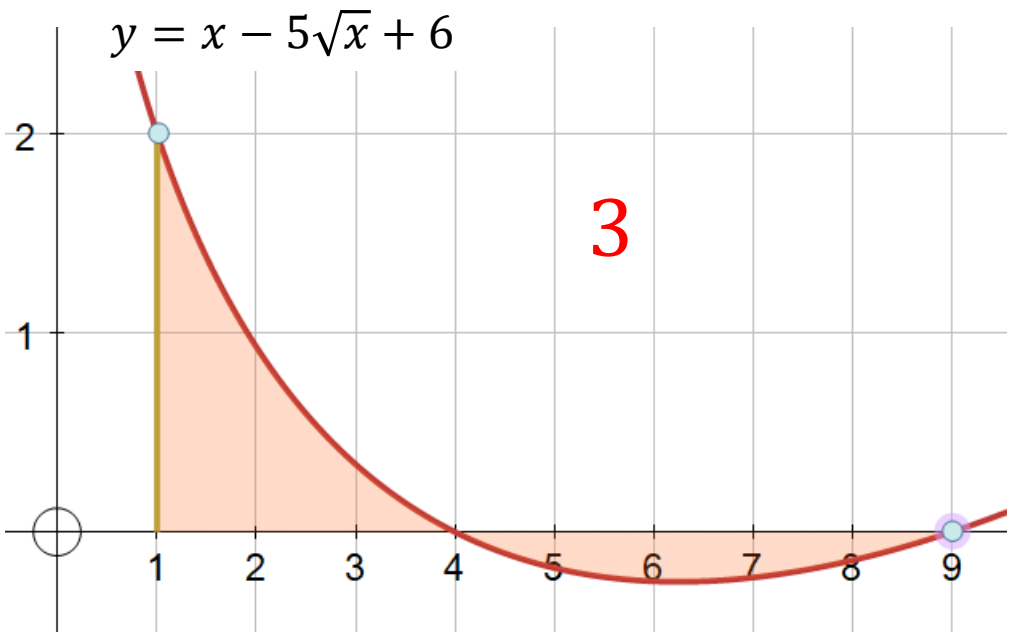
$y = 1 + 3x - x^2$



$y = x^2 - 3x + 1$

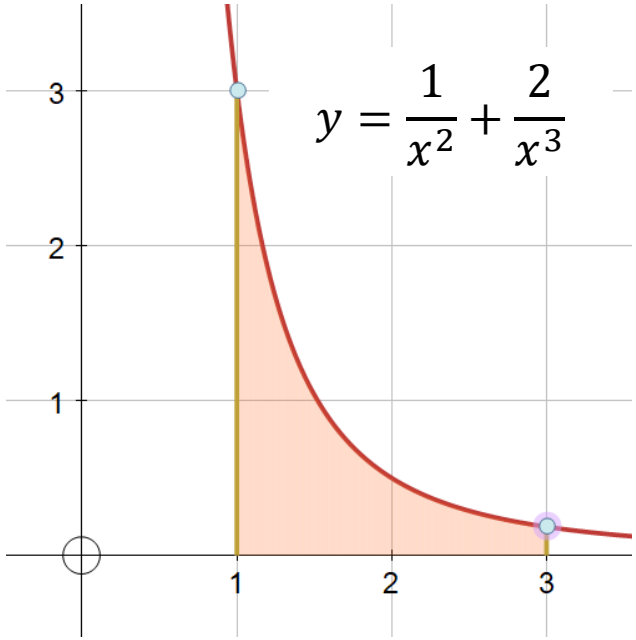
$$9$$

$y = 1 + 3x - x^2$

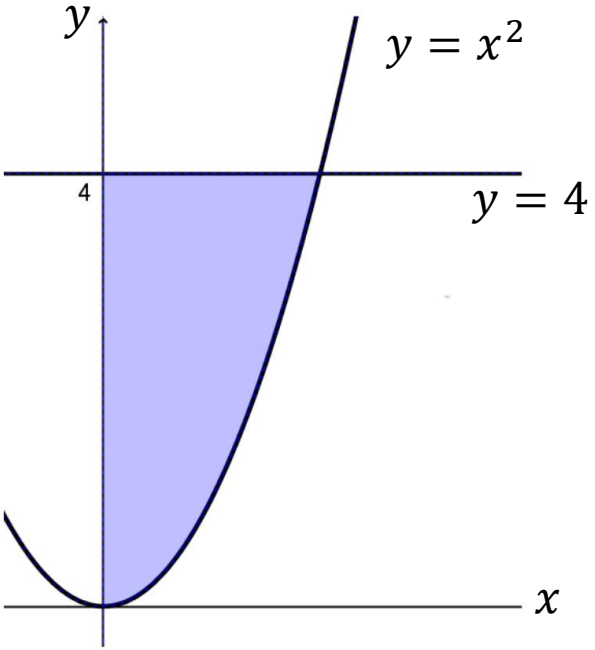


3

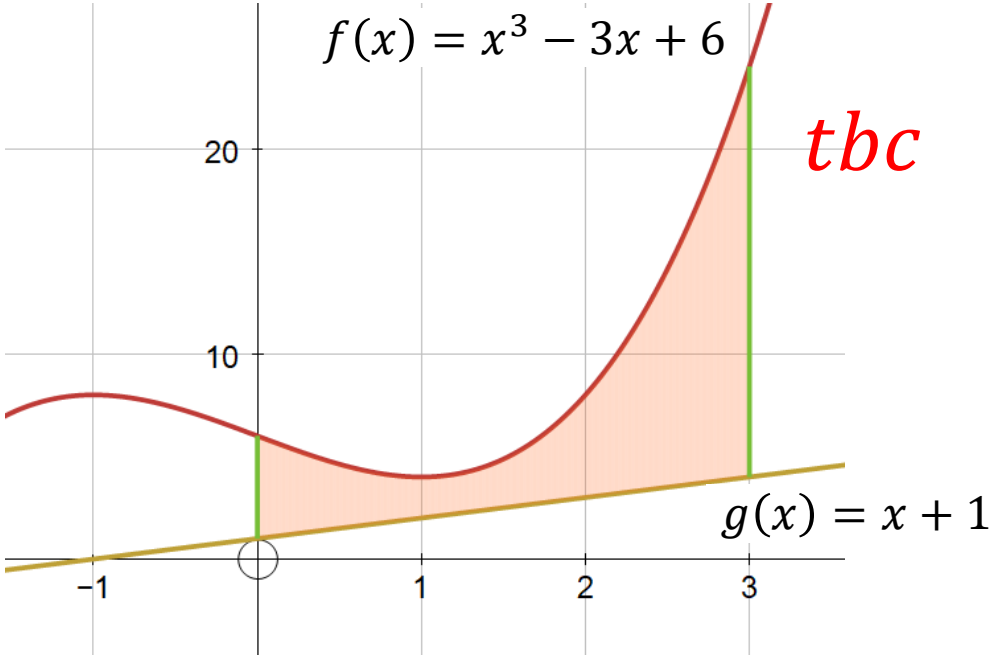
Find the area enclosed between the curve $y = x^3 - x$ and the x axis.



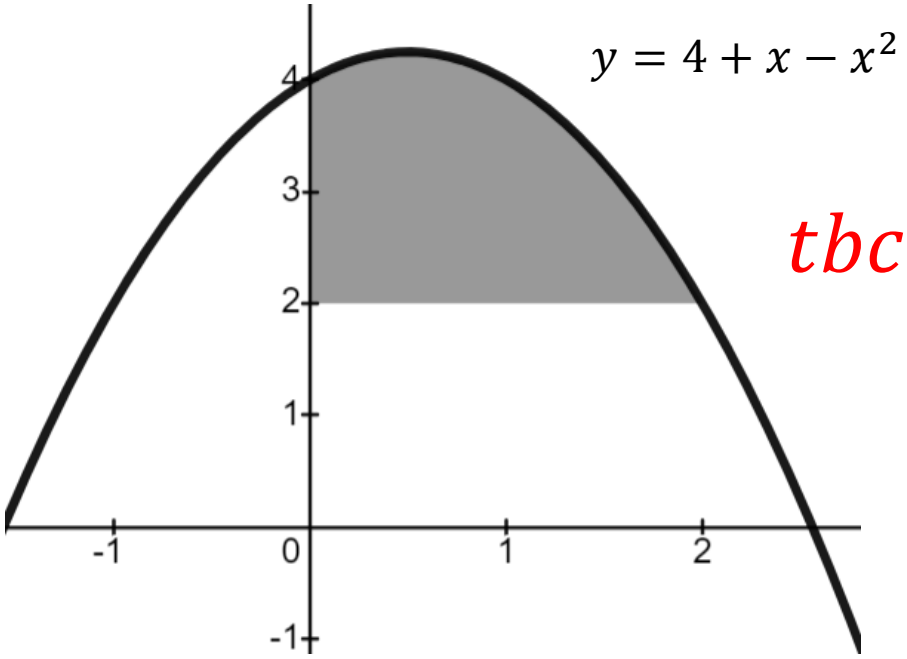
$\frac{14}{9}$



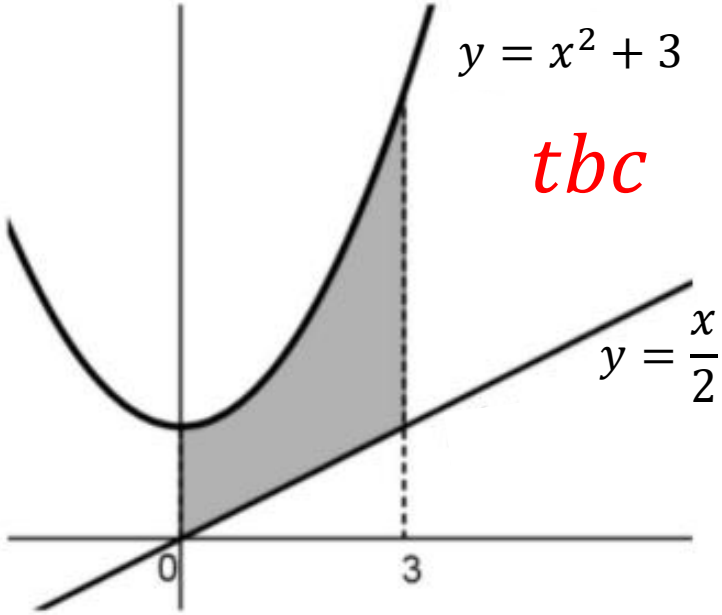
tbc



tbc

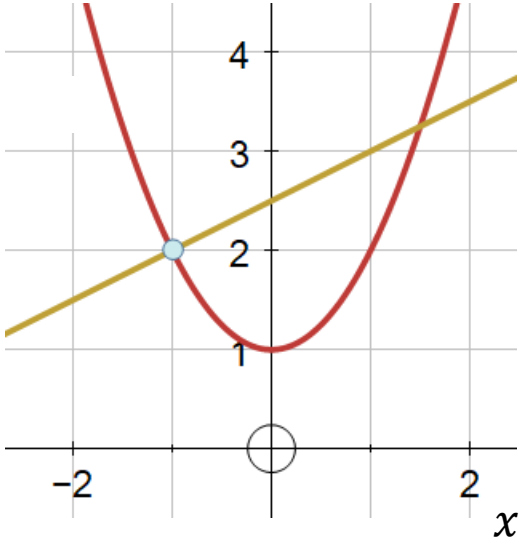


tbc



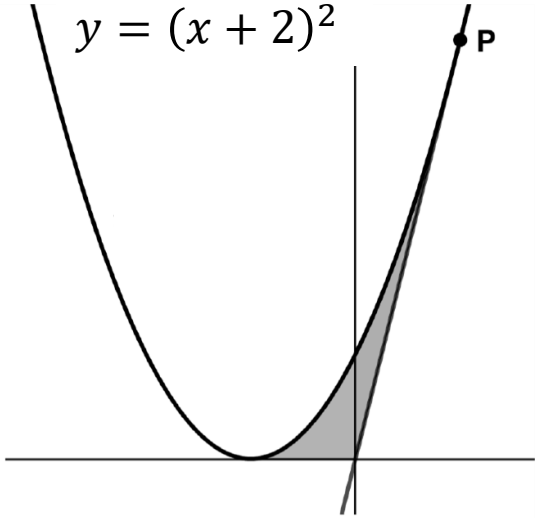
tbc

Find the area between the curve $y = x^2 + 1$, and the normal to the curve at the point shown.



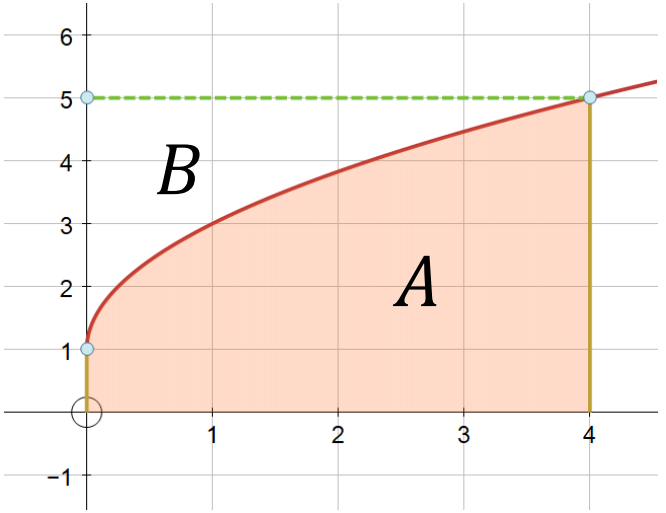
tbc

Find the area between the curve and the tangent to the curve as shown below.

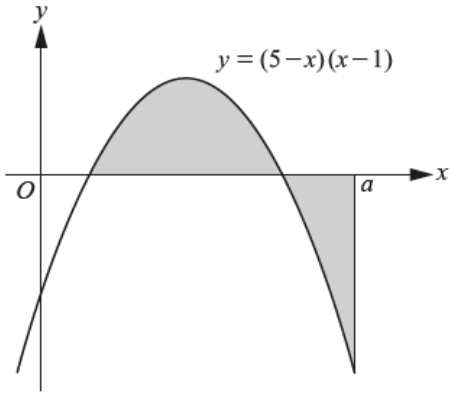


tbc

Find area B below.
Can you do it without finding area A first?



tbc

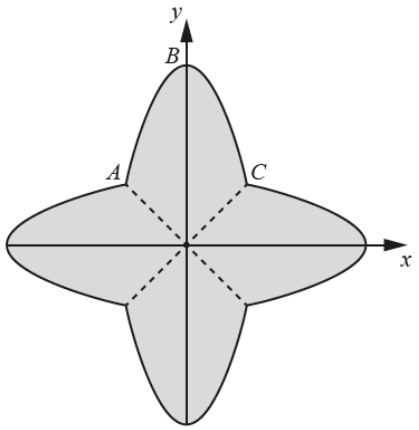


tbc

The diagram shows part of the curve $y = (5-x)(x-1)$ and the line $x = a$.

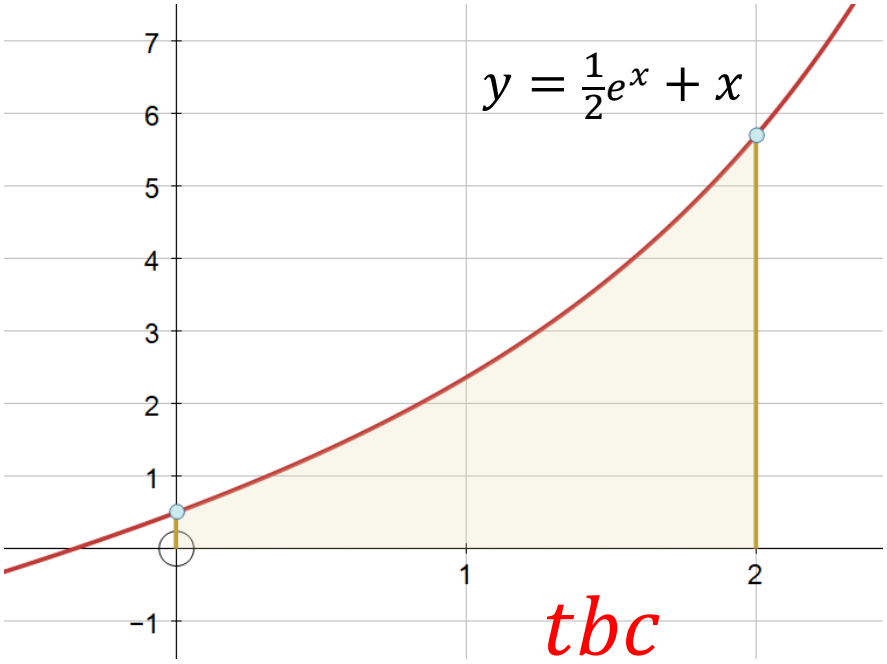
Given that the total area of the regions shaded in the diagram is 19 units^2, determine the exact value of a. **[8]**

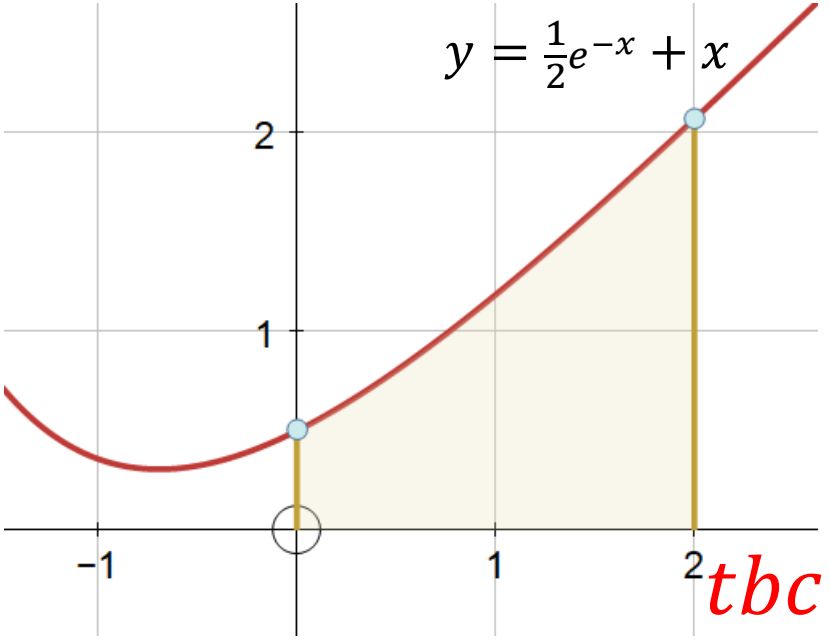
The diagram shows a part ABC of the curve $y = 3 - 2x^2$, together with its reflections in the lines $y = x$, $y = -x$ and $y = 0$.



$\frac{44}{3}$

Find the area of the shaded region. **[7]**


$y = \frac{1}{2}e^x + x$
7
6
5
4
3
2
1
−1
1
2
tbc


$y = \frac{1}{2}e^{-x} + x$
2
1
−1
1
2
tbc