



# SPTA

## Higher Homework

### Integration (B)

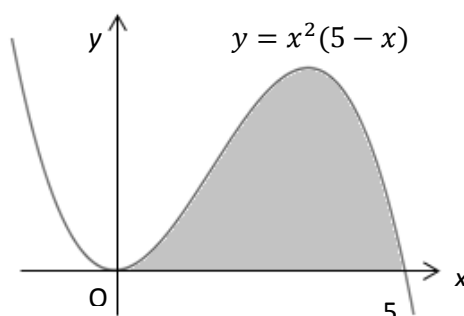


1. Integrate (a)  $\int (5 + 3x)^2 dx$  (b)  $\int \frac{x^3 - 5x}{\sqrt{x}} dx$  (4)

2. Evaluate  $\int_1^3 \frac{x^3 + 3}{x^2} dx$  (3)

3. Find the positive value of  $p$  for which  $\int_0^p 2x + 3 dx = 4$  (4)

4. Find the area between the curve  $y = x^2(5 - x)$  and the  $x$ -axis as shown in the diagram.



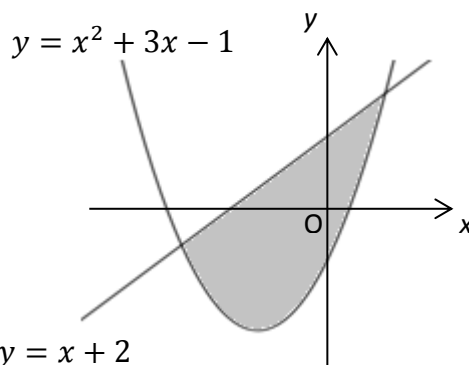
(4)

5. The gradient of a tangent to a curve is given by  $\frac{dy}{dx} = 3x^2 - 2$

If the curve passes through the point  $(1, -2)$  find its equation.

(3)

6. The line  $y = x + 2$  intersects with the equation  $y = x^2 + 3x - 1$  as shown in the diagram



- (a) Find the coordinates where they meet

(2)

- (b) Calculate the shaded area

(4)