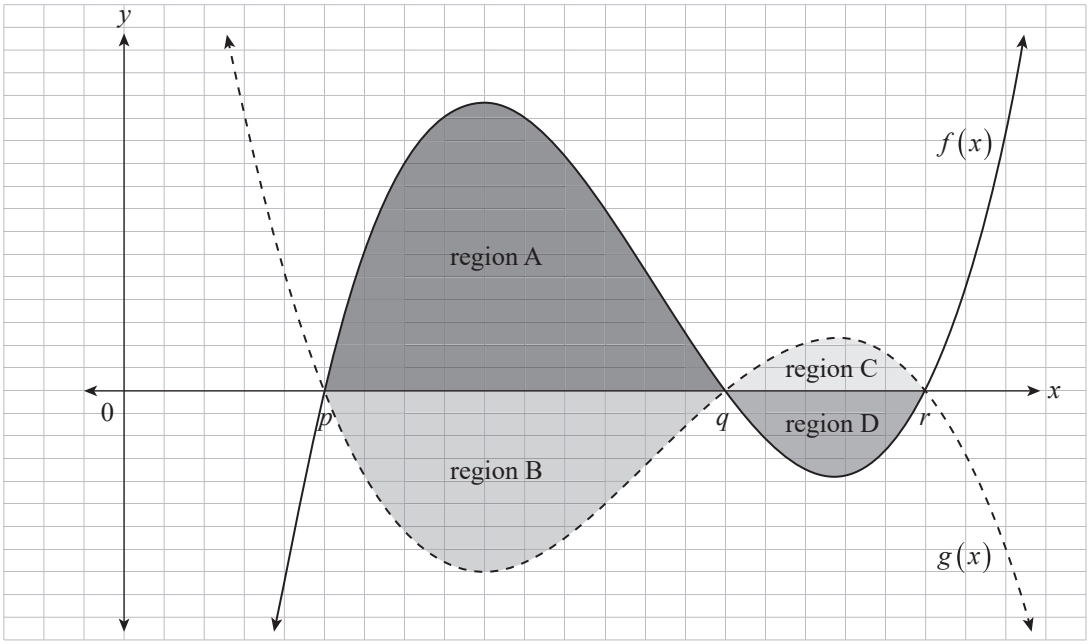
Question 4 (4 marks)

The graphs of $y = f(x)$ and $y = g(x)$ are shown below.

The graphs intersect on the x-axis at points p, q, and r and form the regions that are labelled A, B, C, and D.



It is known that region A has an area of 16 square units, and that regions A and B have a combined area of 26 square units.

(a) State the value of $\int_p^q f(x)\,dx$.

(1 mark)

(b) State the value of $\int_p^q g(x)\,dx$.

(1 mark)

It is also known that $\int_p^r f(x)\,dx = 11$ and that $\int_p^r g(x)\,dx = -9$.

(c) Find the area of region C.

(1 mark)

(d) Calculate the value of $\int_p^r \left(f(x) - g(x)\right)dx$.

(1 mark)