2: A geometric series has first term a and common ratio r.

Given that

- the third term in the series is 64
- the sixth term in the series is –8

(a) show that $r = -\frac{1}{2}$

(2)

(b) find the sum to infinity of the series.

(4)

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Question 2 continued

(Total for Question 2 is 6 marks)

3: $f(x) = (3x^2 - 4x - 5)(x - k) - 5$

where k is a constant.

(a) Deduce the value of the remainder when $f(x)$ is divided by $(x - k)$

(1)

Given that the remainder when $f(x)$ is divided by $(x + 2)$ is 25

(b) show that the value of k is -4

(2)

(c) Hence find the quotient and remainder when $f(x)$ is divided by $(3x - 1)$

(4)

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