

2.

$$f(x) = (x - 4)(x^2 - 3x + k) - 42 \text{ where } k \text{ is a constant}$$

Given that $(x + 2)$ is a factor of $f(x)$, find the value of k .

(3)

by Factor Theorem, $f(-2) = 0$, so

$$((-2) - 4)((-2)^2 - 3(-2) + k) - 42 = 0$$

(1 mark)

$$-6(4 + 6 + k) - 42 = 0$$

$$-6(k + 10) = 42 \quad (1 \text{ mark})$$

$$k = \frac{42}{-6} - 10 = -17 \quad (1 \text{ mark})$$