10. $$\mathrm{f}(x) = \frac{3kx - 18}{(x+4)(x-2)} \qquad \text{where } k \text{ is a positive constant}$$

(a) Express $\mathrm{f}(x)$ in partial fractions in terms of k.

(3)

(b) Hence find the exact value of k for which

$$\int_{-3}^{1} \mathrm{f}(x)\,\mathrm{d}x = 21$$

(4)