f r q

$$j(x) = \log_2\left(\frac{(x+4)(x^3)}{(x-2)^{11}}\right), x > 2$$

(ii) $k(x) = (\cot x)(\csc x)$

$k(x) = \left(\frac{\cos x}{\sin x}\right)\left(\frac{1}{\sin x}\right)$

$k(x) = \frac{\cos x}{\sin^2 x} = \frac{\cos x}{1 - \cos^2 x}, \sin x \neq 0$

Part C

Select a point value to view scoring criteria, solutions, and/or examples to score the response.

✓

0	1	2

The student response includes both of these criteria.

- $(2^x = 6 \text{ or } 2^x = -3)$

- $x = \log_2 6$

Model Solution

$m(x) = 18$

$(2^x)^2 - 3 \cdot 2^x = 18$

$(2^x)^2 - 3 \cdot 2^x - 18 = 0$

Let $y = 2^x$. $y^2 - 3y - 18 = 0$

$(y - 6)(y + 3) = 0$

$y = 6 \text{ or } y = -3$

$2^x = 6 \text{ or } 2^x = -3$

There is no real value such that $2^x = -3$.

$2^x = 6$

$\log_2(2^x) = \log_2 6$

$x = \log_2 6$